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ATOMIC IMPERIALISM

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Atomic Imperialism

The State, Monopoly, and the Bomb

By JAMES S. ALLEN

Government and the bomb business . . . Morgan, du Pont, and Rockefeller in the world cartel . . . Uranium rush . . . Science and war . . . Forced labor in Africa . . . Baruch Plan . . . People against the bomb

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Atomic Energy and Society
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Reconstruction, the Battle for Democracy
The Negro Question in the United States

ATOMIC IMPERIALISM *The State, Monopoly, and the Bomb*

By JAMES S. ALLEN

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Introduction

BEHIND THE CULT of the atom bomb a thriving business operates, clothed in the authority of the state and surrounded by an aura of false patriotism. It is a profitable venture, if such a term can be used for a business the objective of which is to spread death on a scale never before attempted as a conscious activity of man.

In capital assets the atomic munitions industry is bigger than General Motors and United States Steel combined. Owned by the government and operated by the private corporations, the enterprise represents the merger of state and monopoly at the very highest national level. This state-owned, monopoly-dominated combine heads a world cartel covering raw materials and atomic enterprises in a number of countries. In the new munitions cartel, the most powerful ever to operate, are to be found the peak groups of world finance capital.

Here we have cartel politics in the most developed form. The state apparatus and the corporate structure are thoroughly intermingled, and this complex is ruled by the giant trusts. National policy becomes a direct function of the uppermost monopoly circles. On an international scale, the cartel represents the same intermixture of government and monopoly. In the sphere of diplomacy the most direct expression of the cartel's program for control of the world's atomic resources is the Baruch scheme for international control of atomic energy.

The fusion of state and monopoly typified by the atomic weapons combine serves as the principal base of reaction with a fascist orientation, and as the center of war incitement. The prevailing policies of the United States are most appropriately described by the term atomic imperialism.

In the period following the first world war the term dollar imperialism was commonly employed to describe the chief characteristic of American expansion abroad at that time, the economic and financial penetration of many regions of the world. As the prime imperialist power after the second world war, the United States overshadows all non-socialist powers combined, in military might as well as capital accumulation. The country is in the process of permanent militarization, and armed power commensurate with the program of world domination is being amassed.

In seeking to impose so-called American world leadership upon other nations, the militarized monopoly state follows a policy of might and its diplomacy has a sharp belligerent tone. Most symbolic of this position is the defiant massing of atomic weapons and the threat to use them for the realization of imperialist objectives. Despite widespread condemnation of its stand, the United States steadfastly has refused to agree to their abolition, and continues with all haste to stock the atomic arsenal in the hope of attaining decisive superiority. From this "position of strength"—buttressed by other arms, a far-flung network of bases, and alliances wherever they can be imposed—the atomic imperialists are setting a course toward war.

Possession of the new weapon is supposed to assure invincibility in war. This myth is assiduously cultivated, although no power threatens to attack us, and the bomb is essentially an offensive, terror weapon. Those who advocate launching a "preventive war" against the Soviet Union claim the bomb will guarantee immediate victory in a blitz attack. A variation of this insanity has become current with the further expansion of the atomic industry and the development of weapons of varied calibers. It is now proclaimed that the United States has the capacity and raw material for limitless production of nuclear munitions, assuring wholesale employment of "the paramount instrument of victory" at will, either against troops in the field or against densely populated centers. A concurrent resolution was introduced in Congress in September 1951 by the chairman and vice-chairman of the Joint Committee on Atomic Energy calling for all-out production of atomic weapons to equip rapidly the Army, Navy, and Air Force with these missiles in far greater number and variety.

The more cautious among the warmakers are not so ready to rely exclusively upon atomic weapons. The position is taken that their stockpiling and development redresses the balance of world power on the side of the United States, provides the country with time to raise the level of general armaments, and as a whole wins more time to prepare for total war.

Both lines of argument start from the same premise and are directed toward the same end: the central role of the terror weapon in warfare

and the fixed objective of world war.

Bellicose leaders have always claimed a supreme weapon, capable of assuring a quick and cheap victory, when they are intent upon a war the people do not want. Thus, the Nazis claimed that tank and air superiority in a "blitz" attack would assure victory. But superiority in a single weapon, or even in a branch of arms, has never been enough to win a war. Superiority of this kind can be very relative and also very transitory, in view of the scientific and technical knowledge available to all. Furthermore, although the atomic bomb may be the most destructive explosive yet devised, experience has shown that the mass slaughter of civilian populations and the wholesale destruction of productive capacity cannot in themselves assure victory. Hitler practiced genocide with terrible though less potent weapons. Korea was devastated by the massed air power of the United States using conventional bombs which produced the same total effect as might be expected from fewer atomic missiles, but the result has been a long military stalemate. Obviously, there are other factors, even more important than the techniques employed, such as the people's will to fight in a just cause, which together decide the outcome.

The most sobering influence upon the atomocracy is the certainty of retaliation by the same means should the United States launch atomic warfare. In 1949 an atomic-type explosion in the Soviet Union, detected by instruments abroad and confirmed by an official Soviet statement, showed conclusively that the U.S.S.R. had the bomb. Another test of an atomic weapon in the Soviet Union and a press interview with Stalin on October 6, 1951, indicated the U.S.S.R. was keeping pace with the United States in the development of a variety of atomic weapons. In his interview Stalin put the matter succinctly: "The believers in the atomic bomb might consent to the prohibition of atomic weapons only when they see that they are no longer the monopolists."

Thus, the American people can expect neither security nor easy victory from atomic weapons. On the contrary, the net effect of the armament race which the American government is intent upon pursuing, is to expose us to direct retaliation by the same terrible means which the atomocracy counts upon to terrorize the world.

For the first time since the Civil War the homeland would become a theater of war if the leaders of atomic imperialism have their way. Our people have never really tasted modern war. We went through two world wars practically unscathed, the native land secure, free from direct attack. To sense how the situation has changed, it is only necessary to look at our exposed cities plastered with signs pointing to bomb shelters, and at the elaborate warning and drill systems. Guided missiles, transcontinental bombers, improved Schnorkels and other carriers of atomic explosives can come our way also.

Global bases will no more screen our shores than the world-girdling military outposts of the British Empire saved London from a rain of death during the last war. It is impossible to maintain an impenetrable defense along our thousands of miles of coastline or along our extensive land borders. We cannot disperse or move underground our great industrial centers and congested cities. The civilian defense program accepts the premise that in time of war the mass of people would be more or less where they are now, and it is not pretended that more than a tiny fraction of the urban population can be moved.

Nor can we expect other nations to absorb the shocks of war for us. The elaborate structure of alliances which atomic diplomacy is busy trying to erect is flimsy, unstable, and undependable. It is built on the quicksand of aggressive imperialist ambitions and has no real or lasting support among the peoples. These "defense alliances" require other nations to submit to the policies of the United States, which is already thoroughly hated by broad sectors of their populations. The burden of national armament demanded of each North Atlantic bloc ally is becoming unbearable, necessitating severe cuts in the standard of living and increasing inner strains to a critical point. The mustering of neo-Nazis and former collaborators with the Axis in support of the American program places the United States on the same level as their late enemy in the minds of the people.

Above all, the people are alarmed at the danger to which their homelands are exposed. The British do not relish the role their land has been assigned by the Atlantic Pact generals, as a stationary carrier for American air armadas, in this fixed position inevitably subject to attack from relatively nearby bases. Nor can the Japanese accept with composure a similar role as the offshore base for American forces, the function Japan is to assume under the separate treaty, and a role it has already played in the Korean war, although the policy on the North Korean side of limiting the conflict saved them from retaliation.

It is the assumption of the Atlantic Pact that France and West Germany will provide the major ground forces for the European battlefield, relieving the United States of the necessity of sending many divisions. Despite the insistent demands of the American government and grants of billions of dollars, the expected mass armies are still not forthcoming, the "European army" of over two score divisions is non-existent. Instead, additional American troops have been dispatched to Europe to provide the generals of the North Alantic Treaty Organization with some "dependable" soldiers.

The fact remains that the people are so fundamentally opposed to the entire course of policy that whatever forces are mustered, American or European, find themselves in the midst of unfriendly territory. The strength of the Communist parties in western Europe bespeaks the great organized opposition to the contemplated war, especially among the working people. Under powerful popular pressure for peace, even conservative political circles edge toward neutrality, especially since the value of the American alliance is so dubious and the sacrifice of national interest demanded by the United States is so great.

Obviously, other nations are not ready to do the fighting and dying in the interests of United States imperialism. The Korean war revealed to the American people the deception inherent in the war program. In terms of direct military participation, the contribution of the Atlantic allies in this criminal venture was negligible. Aside from the South Koreans themselves, Americans have borne the brunt of the fighting, during the first year suffering battle casualties which exceeded the losses sustained by American armed forces in the first year of conflict in the Pacific during World War II. This may well prove the pattern for any war, big or small, instigated by the atomocracy.

Impatient with the uncertain and unstable allies of the Atlantic bloc, a strong trend within the warmaking oligarchy would drastically cut financial and arms aid to these countries and concentrate entirely upon the total armament of the United States. General Douglas MacArthur is an outstanding representative of the go-it-alone trend. The general contended that nothing short of an atomic attack upon China would suffice to finish the war in Korea, even at the admitted risk of war with the Soviet Union, which has a mutual assistance treaty with China. Although MacArthur was dismissed from his command in the Far East, no cause for relief could be found in the reply of the Chiefs of Staff to his arguments. They turned down the proposal to atom-bomb

China on the ground that atomic missiles should not be squandered on a secondary objective when all such weapons would be needed to strike at the Soviet Union. As for other issues raised in the dispute, the Administration, oriented toward Europe as the main theater of war, felt it important to build up allies, and wanted more time to mount a major war.

By and large, the extended discussions around the dismissal of MacArthur revealed that the differences existing at the top, while sharp, were mainly of a tactical and partisan nature. Both sides argued within the framework of a war program, whether the go-it-alone immediate war advocated by MacArthur or the coalition war of aggression sought by the dominant policy-makers. Neither side assessed correctly the great power of the peoples now resisting the war provocation and the power of additional millions who will be arrayed against the United States should it come to war.

War preparations are proving detrimental to the American people. The massive arms budget burdens them with taxes and sends the cost of living soaring. War-inspired inflation is already playing havoc with the economy, and unemployment is growing in civilian industry. Fearful of increasing internal stress and economic decline despite the high arms budget, some monopoly circles show signs of leaning toward a slower pace of war preparations. Among others, this tendency was expressed by Philip D. Reed, chairman of General Electric Co., which plays the leading role in both the central mobilization agency of the government and in the atomic enterprise. In a speech before a gathering of American and European industrialists in New York on December 5, 1951, he called for some reduction in arms spending and urged allowing more time, another two or four years, to complete the armament program. Pointing to the dangers threatening from inflation throughout the Atlantic bloc countries, he also advocated small reductions in their arms programs. Contrary to everything that has been said in justification of the war hysteria, Reed declared that all evidence indicated "Russia will not deliberately precipitate another world war within the foreseeable future."

Despite this trend, the Administration continues to expand military production. The new budget submitted by the President in January 1952, and the arms program projected for the year, would impose additional and onerous burdens upon the people. There is to be more guns, less butter.

Other domestic preparations for war indicate the heavy price in loss of democratic liberties to be exacted from the American people. The turn to reaction is sharp. As the state becomes increasingly militarized, the established constitutional guarantees of civil liberties are seriously undermined, the rights of trade unions are drastically circumscribed by anti-labor laws, and the Negro people are subjected to more severe persecution. The most drastic step, involving the nullification of the Bill of Rights, is the imprisonment of Communist leaders for the mere advocacy of ideas, rendering their party practically illegal, and placing under the threat of persecution anyone opposed to the war policy, to the resulting cuts in living standards, and to the flagrant disregard of the Constitution.

The war danger is very serious. But war itself is not inevitable. The Soviet Union offers to negotiate at every important point, and also seeks a comprehensive settlement of all major questions at issue, on the basic premise that both social systems can coexist in peace. Neither in the internal situation nor in the foreign requirements of the Soviet Union is there anything that impels it toward war. It is engaged in great development projects at home, designed to obliterate the last traces of the recent devastating conflict, and to increase the well-being of the people. The United States is threatened by no one.

Our most pressing difficulties at home and abroad are caused by the belligerent and aggressive program of the leaders of atomic imperialism. The great opposition these policies encounter throughout the world should be welcomed by the American people, for we are thus granted an additional opportunity to halt the mad rush toward war. Let the people exert their will for peace, and national policy will be influenced in the direction of negotiations with the Soviet Union for a mutually satisfactory solution of outstanding differences.

This book is essentially a study of the atomic enterprise in its economic and political aspects. By throwing some light on the source of present war policies it is hoped the work may contribute to the struggle for peace. Certain social phases of atomic energy, especially its great constructive potential, were treated by the author in his book, *Atomic Energy and Society,* and this ground is not covered again in the present work.

January, 1952 J.S.A.

PART I THE STATE CARTEL

1. The New Munitions Industry

THE ATOMIC WEAPONS industry is big. In the words of W. W. Waymack, for a time an Atomic Energy Commissioner, "A new industry has suddenly appeared, of huge stature when first unveiled, growing in overall dimensions by the hour, already by conventional measurements the biggest single industry we have. It ramifies throughout the country and in no negligible sense throughout the economy."[1]

This hitherto secret enterprise was announced to the world when the end product was dropped on Hiroshima on August 6, 1945. Having thus demonstrated the success of its commodity, the new industry, until then largely experimental, turned with confidence to the manufacture of more and "better" weapons.

The war's end made no difference. The industry boomed. Peace as understood by the real managers of the enterprise required more bombs. In five postwar years, while American diplomats were professing the highest humanitarian aims, more capital was invested in expansion of weapons production than had been expended during the war in the establishment of the nuclear project.

By the end of 1950 almost $5 billion had been appropriated by the government for nuclear weapons, and a supplementary appropriation of over $1 billion was before Congress. When the Atomic Energy Commission took over from the Army in January 1947, the industry represented a total capital outlay of $2.2 billion during a period of seven years, but mostly since 1943. In the following four years the known appropriations for atomic munitions reached $2.6 billion. Including the supplementary appropriation, total grants for the fiscal year 1950-1951 alone would reach $2.3 billion, or more than the entire cost of the wartime project.* On a very liberal interpretation possibly eight to ten per cent of the total may have been devoted to exploring the constructive uses of atomic energy, although many of the activities in this sphere indirectly serve the weapons program.[2] For all practical purposes, atomics is totally militarized.

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* For the fiscal year 1951-52, the A.E.C. requested another $1.2 billion, and the actual appropriations are likely to be higher than that, bringing the total sum assigned for atomic weapons to about $8 billion by mid-1952.

The supreme munitions industry comprises an integrated system of production plants, laboratories, and testing facilities which is probably the most complex economic and scientific enterprise in the United States. The multiple operations connected with the production of nuclear explosives are carried on in some two score separate installations in at least 24 states and include the weapons proving ground at the Eniwetok Atoll in the Pacific. The land area occupied by these undertakings totals about 3,000 square miles (larger than the states of Rhode Island and Delaware combined). Scores of industries provide equipment and materials. The largest industrial corporations are among the managers and contractors of the enterprise, while practically every major research and engineering institute has been drawn into its development. In the industry proper over 100,000 people are employed, 19 out of 20 by the private corporations which manage the undertaking for the government. New construction of nuclear facilities after the war was the largest single operation in the country. The combine reaches into a dozen countries for uranium ores and other raw materials, while the frantic search for new sources extends into many more.

Immediately or potentially the atomic technology affects the established economic interests in such diverse fields as electric power, drugs, transportation, explosives, fertilizer, oil, coal, medicine, steel, food, servo-mechanisms. It impinges upon the network of corporate relations at the most important points. With the expansions under way in 1951, the atomic bomb enterprise will have a larger investment in plant and equipment than U.S. Steel and General Motors combined.

State Capitalism at the Peak

Atomics is not only big industry, it is also big business. It is big business raised to the apex of state monopoly, and from that pinnacle commanding the vast new technology and its far-flung economic and political offshoots. State ownership with corporate control is the central characteristic of the organization of the new munitions industry. It is state enterprise under the control of big business, the merger of the state and corporate structures at the zenith. It typifies state monopoly capitalism at maturity.

In this mixed state-corporate undertaking the structure of control is complex. Government agencies and private corporations intermingle in all phases, ranging from the formulation of policy and program to the administration and management of operations. Personnel and function are closely interwoven, with a certain division of labor between the government apparatus and the private corporations. The system reflects the complexity of the monopoly structure and also the intricate functioning of the state as an instrument for the trustification of the economy. There is nothing static about this system, which reacts sensitively to rivalries among monopoly groups and to the current twists of domestic and foreign policy. But the fundamental feature remains unchanged—the fusion of the state with the corporate structure at a level never before reached in this country.

This development serves as the base of reaction, tending in the direction of fascism, unless the people are able to meet this threat effectively. The advanced coalescence of state and monopoly is the central material condition for the open and aggressive dictatorship of big capital, which is the essence of the fascist form of state. No strict parallel can be drawn between the development of reaction in the United States and the process by which the Nazis came to power in Germany, where the mass fanatical party of fascism, the unceremonious overthrow of the old constitution, and the appearance of the personal dictator were characteristic.

Elements and trends along these lines can be found in the United States also, but reaction continues to operate within a framework which retains many of the outer forms of democracy. However, the very structure of the state is increasingly affected by its militarization and by great centralization under monopoly control. As events themselves demonstrate, the content and result of this development in the United States can be no less perilous than the fascist form of reaction as we knew it in Germany. How far the process will proceed toward a fascist-type state in our country depends primarily upon the people's resistance to the war program.

The atom bomb business is the furthest advance of the organic fascist trend in the United States. It may be considered a prototype of fascism within a country which as a whole is beginning to lose its traditional democratic form. This "mixed" enterprise was the first to perfect the system of thought control, loyalty tests, dossiers, F.B.I. surveillance, and other practices of the police state which have radiated out to affect the country in general. The most thorough coordination of labor prevails throughout the enterprise, in the form of a glorified company unionism. Basic science and the institutions of higher learning are subverted to the military program by the hierarchy of corporate magnates, professional militarists, and military scientists ruling the industry. The complete militarization of atomics foreshadowed the permanent militarization of the country which is now proceeding.

In its general impact upon American thought the atom bomb business inspired only decadence, and brutalized the human spirit. The atom bomb has become a symbol of the policy of might. It gave rise to a new school of "blitz" war, dazzled by dreams of instantaneous victory resulting from atomic dosing of cities, regions, and entire countries. If in more realistic circles the fantasy of total victory in a "preventive" war was not so readily accepted, the threat of mass atomic annihilation remained a cornerstone of national policy. Dollar diplomacy characterized the previous wave of expansion after the first World War. Atomic diplomacy is the earmark of the present drive for world hegemony. Not that dollar diplomacy is now absent. It plays a central role, but this time in conjunction with all the appurtenances of imperialist power at the peak, especially in its strategic and military aspects.

The Wartime Project

The groundwork for the present atomic cartel was prepared during the war. By the end of the world conflict the basic structure of the industry was already in being, and the framework of the state cartel erected. Therefore, before examining the consolidation and expansion of the atom bomb business after the war, with which the rest of this book is concerned, it is necessary to outline briefly the principal characteristics of the wartime project.

The establishment of the industry may be divided into two stages: the period of incubation, from 1940 to 1942; and the construction of the industry, 1943 to 1945.

During the initial period, organized research in both Britain and the United States came to the conclusion that an atom bomb was feasible. By the end of 1942 it was demonstrated that large-scale production of the nuclear components of the bomb was immediately possible, and designs for the production facilities were well advanced. The attack on Pearl Harbor in December 1941 and the direct involvement of the United States in the global conflict accelerated the entire project. The remoteness of this country from theaters of war, the peripheral role of the United States in the conflict as a whole, and command of huge resources, only part of which were committed, enabled the United States to undertake the "all-out" and massive effort to produce atomic weapons.

Even at this early stage the features which came to characterize the new industry were already apparent. Politically the most important decision was to keep the project a top Anglo-American secret. As far back as October 11, 1941—before the United States entered the war—President Roosevelt suggested to Churchill that the British and American efforts be co-ordinated or even jointly conducted.[3] By June 1942, according to Churchill, there was an understanding between the British prime minister and Roosevelt that the results of the project were to be fully shared by the two countries as equal partners.[4] This understanding apparently was confirmed and formalized at the Quebec Conference of August 1943, when Roosevelt and Churchill, with the participation of Prime Minister MacKenzie King of Canada, arranged for the transfer of the British nuclear scientists to the American undertaking, and the co-ordination of the Canadian effort (principally with respect to raw material but also including the experimental work at Montreal) with the major enterprise in the United States. The Soviet Union was completely excluded.

In Volume IV of his war memoirs, Churchill tells of his trip to Moscow in August 1942 to inform Stalin that the Second Front would not be launched that year. This was the first of a series of postponements that placed the major burden of the war upon the Soviet Union. Nevertheless, according to the prime minister, Stalin offered to provide the British with all information about the new Russian rocket mortars, and suggested an agreement among the allies to exchange information about inventions. Churchill replied that he was ready to give everything without bargaining except for such devices as may be carried in airplanes and if shot down by the enemy would make the British bombing of Germany more difficult. This understanding was accepted by both sides.[5] Not a word did Churchill say about the preparatory work on the atom bomb, by then well advanced in Britain and America, which were beginning to co-ordinate their separate efforts. If by his exception Churchill meant to exclude the then still theoretical atomic bomb, which is not merely another "device" but involves an entirely new technology of paramount military and industrial value, he kept this hidden from Stalin.

It is obvious, therefore, that from the very inception the atomic project was kept strictly an Anglo-American affair, foreshadowing the postwar diplomacy that was to split the anti-Hitler alliance. Within the framework of the wartime coalition, the Anglo-American bloc was preparing a supreme weapon which, it was hoped, would endow this combination with overwhelming military might *vis à vis* the Soviet Union. The post-war speeches of Churchill confirm that this concept, later formalized in the Atlantic Alliance, played a decisive role in the war policy of the western powers.

With respect to the organization and control of the new industry the most important step was to concentrate the effort in the United States. In view of their own exposed and precarious position, and the superior material advantages of the United States, the British came along with this plan. Thus, from the very beginning, the pattern was established for the American monopoly of the new weapon.

With the Soviet Union excluded and the United States assured complete control of the projected weapon, the organization of the new industry was undertaken with vigor.

An outstanding feature of the initial phase was the mobilization of science for war. As matters stood in 1940, according to Henry D. Smyth, the official chronicler of the atomic project, "American-born nuclear physicists were so unaccustomed to the idea of using their science for military purposes that they hardly realized what needed to be done,"[6] although the necessary scientific knowledge for making the bomb was at hand. The initiative was taken by leading European scientists, who had sought refuge from fascism in the United States. Recognizing the weapons potential of atomic fission and fearing that Hitler might be the first to develop the terrible weapon, they urged the American authorities seriously to explore its possibilities. President Roosevelt was prevailed upon to grant government support to preliminary research, which proceeded on a relatively minor scale, first under the Advisory Committee on Uranium and then under the National Defense Research Council, when it was organized in June 1940.

Research dragged along at a more or less leisurely pace until December 1941, when the decision was made to mobilize the necessary resources to make the bomb. This step was decided by a group which came to be known as the Top Policy Committee, consisting of President Roosevelt, Vice-President Wallace, Secretary of War Stimson, Chief of Staff Marshall, and two science administrators prominently identified with the subsequent military mobilization of research: Vannevar Bush of the Massachusetts Institute of Technology and James B. Conant, president of Harvard University. From later accounts it appears that Wallace, distrusted because of his progressive views at that time, was kept poorly informed about the secret project, and soon became an inactive member of the policy committee. After the death of Roosevelt, Stimson assumed top responsibility for policy, acting as the chief adviser to President Truman on atomic matters.

Once the signal was given for full speed ahead, Vannevar Bush transferred the atomic project to the newly organized Office of Scientific Research and Development, which he headed. The O.S.R.D. was the central agency for the mobilization of scientists in all branches of weapons development, and also the central clearing office through which military research contracts were handed out to the industrial and university laboratories. Accordingly, the O.S.R.D. soon became the top liaison medium through which scientists, corporation executives, and the military were brought together in all phases of weapons research. The atomic bomb work was thus brought under the central supervision of the agency engaged in the mobilization of scientific resources on a scale that resulted in a qualitative change in the organization of American science—its permanent militarization. In this process, a new professional hierarchy was formed, consisting of the top administrators of militarized science, headed by Vannevar Bush and Karl T. Compton of M.I.T., and James B. Conant of Harvard, the very top institutions in their respective fields.

As head of the S-1 Executive Committee, which consisted of the nuclear scientists in charge of the three main branches of research, Conant assumed responsibility for the award of research contracts, which went to the leading industrial laboratories and technological institutes most closely associated with big business. At the same time, Bush set up the Planning Board, with responsibility for engineering contracts, in other words, for the initial organization of the new industry.

The Planning Board was the first top agency through which the corporations entered the atomic industry, except for the research phase in which they were already involved. At the beginning of 1942 when the Planning Board was established, no production unit had yet been built, and the major facilities for the output of enriched uranium and plutonium were still to be designed. But at that time the separation of U-235, or enriched uranium, from natural uranium had already been demonstrated experimentally, and it was well established that the element could be produced by a number of alternate processes. The Planning Board, therefore, was concerned primarily with the organization of that branch of the industry which was eventually established at Oak Ridge, and which today turns out enriched uranium for nuclear weapons. It also assumed responsibility for the large-scale manufacture of heavy water, one of the vital constituents of the projected uranium reactors which would turn out plutonium, the other nuclear explosive. But the feasibility of plutonium production on a large scale was not demonstrated until December 1942, when the first chain reaction was set in motion at the experimental uranium pile in Chicago. Accordingly, the chief interest in engineering contracts during 1942 centered on the separation processes to be established at the Oak Ridge works.

The Planning Board was manned by vice-presidents in charge of engineering or research for corporations mainly of the Rockefeller and Mellon groups.* The direct relationship between the composition of the Planning Board and the prime engineering contracts awarded as a result of its recommendations is clear enough. Thus, Standard Oil Development designed and supervised the construction of the heavy-water plant at Trail, British Columbia; Kellogg Co. was chosen to engineer the gas-diffusion plant at Oak Ridge, with P. C. Keith as executive in charge, while Union Carbide became manager of this key facility for the production of enriched uranium. The present position of Union Carbide, which commands the production of one of the two nuclear explosives, derives from the initial stage of the industry when the Mellon and Rockefeller monopoly groups exerted dominant influence on the Planning Board.

On the other hand, the role within the O.S.R.D., of the hierarchs of M.I.T. and Harvard, institutions most closely identified financially with the Morgan and du Pont interests (as we shall see later), redounded to the benefit of these monopoly groups. While General Electric and other corporations within the Morgan sphere participated in secondary processes at Oak Ridge and supplied specialized equipment and research to other branches of the project, the Morgan-dominated companies did not obtain leading positions within the enterprise until after the war. But the du Pont chemical trust stepped into the project as construction of production facilities was begun.

The construction phase of the industry coincides with the period of complete Army control. The Manhattan Engineering District was formed in August 1942 under the Army's Corps of Engineers. In September Major General Leslie Groves was placed in charge, but it was not until May of the following year that the Manhattan District took over from the O.S.R.D. the research and development contracts. During this transition period the S-1 Executive Committee, of which Conant was chairman, continued to function as the co-ordinating center with the participation of General Groves and the representatives of the corporations engaged in the construction of the new plants. In the words of the official account, besides serving as the advisory board to Bush and Groves, S-1 was "an initial liaison group between the scientific, industrial, and military parts" of the atomic project. After General Groves took complete command of the industry, Conant carried on as his chief scientific adviser.

With the transfer of the project to the Manhattan District, a Military Policy Committee was formed to take charge. The decision was made at a meeting of the Top Policy Committee, attended by Stimson, Marshall, Conant, Bush, and representatives of the Army. Bush became chairman of the new supervisory body, with Conant as his alternate. Major General W. O. Styer represented the Army and Rear Admiral W. R. Purnell the Navy, while General Groves became the executive officer in charge of all phases of the project. Thus, on the eve of the establishment of the nuclear plants, complete military control was assured. The top supervisory group embodied that close union of the military and the science administrators which remains a leading characteristic of the nuclear industry.

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* Its chairman was Eger V. Murphree, vice-president (now president) of Standard Oil Development Co., the research unit of Jersey Standard, the biggest petroleum trust. Other members were: L. W. Chubb of Westinghouse Electrical Manufacturing Co., the joint Mellon-Rockefeller combine; P. C. Keith of M. W. Kellogg Co., engineering unit of Pullman, Inc., controlled by the Mellon and Morgan interests; George O. Curme, Jr., of Union Carbide and Carbon Corp., the principal rival of du Pont in the chemical field; and Warren K. Lewis, the chemical engineering dean of M.I.T.

Coinciding with these changes, the du Pont chemical trust came into the nuclear enterprise in a major capacity. The self-sustaining chain reaction, which demonstrated the feasibility of plutonium production, was first achieved at the very time when the Chicago research center was being appraised by a reviewing committee, designated by General Groves. This committee was dominated by du Pont men.* In sum, on the recommendation of Groves, the du Pont trust was "awarded" the contract for the construction and management of the Hanford plutonium works.

Other peak corporations and institutes participated in various important branches of the enterprise, and we will have occasion later to review their role. But the decisive positions in the new industry were at Oak Ridge and Hanford, the centers of nuclear production, the former for enriched uranium and the latter for plutonium. Union Carbide commanded one, du Pont the other. For all practical purposes these chemical trusts dominated the new industry which was in full operation as the war came to an end.

In the Manhattan District the basic pattern of the nuclear weapons combine as joint state and corporate enterprise, had taken shape. The new industry was concentrated in the United States. Post-war atomic diplomacy was foreshadowed by the exclusion of the Soviet Union from the wartime project, while Britain was brought in and Canada made a partner.

Toward the end of the war, however, important questions of high policy were still to be settled, affecting the structure and aims of the nuclear industry. Was the new industry to continue producing atom bombs or was it to be turned to constructive peacetime purposes?

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* Two of the four active members of this committee were du Pont men—C. H. Greenewalt and Roger Williams, high executives of the chemical trust—while another was W. K. Lewis of M.I.T., which is heavily financed by the du Pont interests. Murphree of the Standard Oil research unit, another member of the reviewing body, did not participate, it was said, on account of illness.

2. Upper Structure of Control

AS MATTERS STOOD in mid-1945, there was no need for the new weapon. Germany had been crushed before the first atom bomb was tested secretly on the New Mexico desert, and the war against the major opponent had been concluded before Hitler had the opportunity to develop the bomb. In fact, as it later turned out, the German scientists had not gone very far along that line, although the necessary knowledge was available to them. As for Japan, she was never considered an atomic competitor.

In any case, no immediate military necessity appeared for a weapon which had been developed with the expenditure of tremendous scientific and material resources. But an entirely new technology had been pioneered which could be turned to peacetime industrial uses. Only a small part of the new enterprise was concerned with the mechanism of the weapon. The production facilities of the Manhattan District turned out nuclear materials which could be used to pioneer in a broad field of industrial development.

The latter alternative was in effect rejected in the final months of the war by the decision to use the bomb against Japan. Without military justification, this move had far-reaching consequences in the realm of foreign policy, and for all practical purposes set the course for the continuing militarization of atomics.

Decision to Use the Bomb

President Truman ordered the atom-bombing of Japan on the recommendation of the Interim Committee, appointed in March 1945 by Secretary of War Henry L. Stimson.

The Interim Committee was in a sense a continuation of the top policy group of the wartime project. Stimson, who had been a member of the old body, served as chairman of the new committee, and appointed as his alternate George L. Harrison, president (now chairman) of New York Life Insurance Co., a billion-dollar corporation. James F. Byrnes, then a private citizen, was brought in as the personal representative of President Truman. The Navy and the State Department were also represented.

To this group were added the three key administrators of militarized science, Vannevar Bush, Karl T. Compton, and James B. Conant. The Interim Committee was assisted by a Scientific Panel, consisting of the nuclear physicists in charge of the main branches of research since the inception of the bomb project: A. H. Compton (brother of Karl T.), Enrico Fermi, E. O. Lawrence, and J. R. Oppenheimer. General Marshall, who had participated in the major policy decisions during the war, also attended the initial meetings.

Stimson, Harrison and Byrnes were undoubtedly the most decisive members. They had a common association with members of the Morgan monopoly circle. New York Life has been dominated over a long period by J. P. Morgan & Co. An insight into Byrnes's connections is provided by the fact that after his resignation as Secretary of State in 1947 he was made a director of the Newmont Mining Corp., the central holding company of the Morgan group in the field of minerals. Besides family ties with members of the inner Morgan circle, Stimson has been identified with this peak monopoly group over a long period, going back to World War I when he supported the interventionist stand of the Morgan bankers. His law firm has also served the Morgan circle.

It was this committee, dominated by Morgan influence and embodying the fusion of science, the military, and monopoly characteristic of the entire atomic enterprise, that decided upon the permanent militarization of atomics.

Its most important decision was to use the atom bomb against Japan. According to Stimson's memoirs,[1] the Interim Committee agreed unanimously on June 1, 1945, to use the bomb as soon as possible against Japan, to employ it against a dual target of military installations and civilian dwellings, and without prior warning of the nature of the weapon. The Scientific Panel concurred, rejecting the position of a group of leading scientists at the A.E.C. laboratory in Chicago, headed by James Franck, who warned against the atom-bombing of Japan and urged the abolition of the weapon. Although some of the signers of the Franck report later deviated from that position, and the report was weak in other respects, the pertinent passages are well worth recalling, for they show that the basic considerations against use of nuclear weapons had been effectively presented even before the bomb was tested in New Mexico and before the people knew of its existence.

"It may be very difficult to persuade the world," said the Chicago scientists, "that a nation which was capable of . . . suddenly releasing a new weapon as indiscriminate as the rocket bomb and a thousand times more destructive, is to be trusted in its proclaimed desire to see such weapons abolished by international agreement." Its use, continued the Franck report, would be followed by "loss of confidence and by a wave of horror and revulsion sweeping over the rest of the world and perhaps even dividing public opinion at home. . . . If the United States were to be the first to release this new means of indiscriminate destruction on mankind, she would sacrifice public support throughout the world, precipitate the race for armaments, and prejudice the possibility of reaching an international agreement on the future control of such weapons."[2]

This clear-cut appeal, which may be considered a forerunner of the Stockholm Pledge of 1950, was met by the Scientific Panel with the usual militarist argument that the use of the bomb would bring the war to a speedy end and save many American lives. It stated: "We see no acceptable alternative to direct military use."

Actually, there was not the slighest military justification for using the new weapon. When the first atomic bomb was successfully tested in the United States on July 16, 1945, Italy had been knocked out of the war and Hitler Germany was already defeated. Truman, Attlee, and Stalin were gathered in Potsdam to discuss a common policy for prostrate Germany. As the sole antagonist of an overwhelming world coalition, Japan's position was hopeless, and she was already sending out peace feelers.*

The American High Command knew of the impending massive attack by the forces of the Soviet Union upon the main concentration of Japanese troops in Manchuria. At the Yalta Conference of the Big Three in February 1945, Stalin had informed his allies that three months after the defeat of Germany the U.S.S.R. would join the war against Japan. This plan was incorporated into the strategy of the

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* In his *Diaries,* the late Secretary of Defense James Forrestal recorded under date of July 15, 1945—nearly a month before the atombombing of Japan—the receipt of messages on the Japanese-Russian conversations, in which Sato, the Japanese spokesman, admitted complete defeat and suggested peace negotiations. (*The Forrestal Diaries,* New York, 1951.)

Pacific war. In his authoritative book on Roosevelt and Hopkins Robert E. Sherwood records official American thinking at Yalta on this point as follows:

"The immensely costly operations at Iwo Jima and then at Okinawa were about to be launched, and the plans had been made for the major invasion of the Japanese home islands in the fall of 1945. MacArthur's calculations were based on the assumption that the Russians would contain the great bulk of Japanese forces on the Asiatic mainland as they had contained the Germans in Eastern Europe. Obviously the entry of the Soviet Union forcibly into the Japanese war by midsummer—before the major invasion—*could mean the saving of countless American lives, and might even make the final invasion unnecessary*."[3] [Emphasis mine—J.S.A.]

As subsequent events showed, the Soviet Union kept its word to the very day, declaring war on August 8 and within an amazingly brief period smashed the Japanese Manchurian armies. The use of the atom bomb on August 6 and again three days later, when the Soviet attack had already begun, therefore cannot possibly be explained as an act of military expediency. The advantages that were supposed to flow from the use of the bomb—speedy conclusion of the war and the saving of American lives—had been guaranteed at the Yalta Conference, and the Soviet Union had kept its pledge. In fact, it appears that the decision to use the bomb and its timing were directly related to the expected Soviet participation in the war against Japan.

P. M. S. Blackett, the eminent British physicist, points to the coincidence of dates in support of his contention that "the dropping of the atomic bomb was not so much the last military act of the second World War, as the first major operation of the cold diplomatic war with Russia now in progress." In commenting on this thesis, Philip Morrison, a nuclear scientist who participated in weapons work at Los Alamos, wrote: "I can testify personally that a date near August 10 was a mysterious final date which we, who had the daily technical job of readying the bomb, had to meet at whatever cost in risk or money or good development policy."[4]

The use of the bomb was a diplomatic move, calculated to circumvent the agreements which had been reached with Stalin at Yalta with respect to Far Eastern questions. Atom-bombing provided the Japanese ruling clique with the occasion for a speedy surrender to the United States, before the Soviet army could participate in an invasion of Japan

proper. The United States thus gained unilateral control of the defeated country and command of the key imperialist outpost in the Far East. From then, the entire course of American policy in Japan and Asia conformed to this pattern, as did the evolution of American foreign policy in general.

The major decision of the Interim Committee (accepted by President Truman who acknowledged full responsibility for the act) led inevitably to the frantic stockpiling of nuclear explosives. The bomb monopoly was to be used as long as possible to gain American hegemony in the world with the threat of overpowering force. This was no idle threat, as was demonstrated by the destruction of two Japanese cities with the secret weapon, and subsequent warnings by Truman that he was ready to order its use again. A cornerstone of the aggressive policy was thus established: to use the head start in nuclear weapons as a means of assuring a degree of military supremacy sufficient to back up claims to world hegemony.

In his Navy Day speech of October 27, 1945, the President proclaimed his intention to keep the atomic bomb a "sacred trust" on behalf of mankind, when the United States government had already lost the confidence of the world. Negotiations would have to be held on innumerable postwar problems, but, as Stimson so aptly phrased it, with the atomic bomb "rather ostentatiously on our hip."[5] With the policy symbolized and initiated by the atom-bombing of Japan, the utilization of atomic energy for peaceful purposes was brusquely set aside. Atomic diplomacy needed an arsenal of atom bombs.

From this flowed the other major act of the Interim Committee, its recommendations for control of the domestic industry. These proposals were incorporated in the atomic energy bill, then being prepared in the War Department and subsequently introduced in Congress, with the approval of the Interim Committee, by Senator Edwin C. Johnson of Colorado and Representative Andrew J. May.* Both men were energetic opponents of any disarmament, atomic or otherwise, and fierce protagonists of military expansion. The main features of the May-Johnson Bill, providing for the joint state-corporate monopoly of atomic energy and for the subordination of the industry to the military program, were carried over into the new law under which the enterprise

* In December 1949, May began serving a brief prison term for accepting bribes in connection with war contracts when he was chairman of the House Military Affairs Committee.

now operates. But the aspect of the bill arousing sharpest public debate was its provision for control of the industry by a commission of Army and Navy officers. The latter revealed, more dramatically than other equally vital aspects of the bill, the central orientation toward the continuing militarization of the country which this proposal so clearly foreshadowed. The opposition was powerful enough to force withdrawal of the May-Johnson Bill.

Instead, a so-called compromise measure, engineered by Senator Vandenberg, was approved on August 1, 1946. The new law established the present Atomic Energy Commission, maintaining close liaison with the military forces. This was hailed in some quarters as a victory for civilian as opposed to military control. But the victory was only formal, for the main purpose of subordinating the atomic enterprise to the military program had been achieved. As we shall soon see, the major provisions of the new law and the actual operation of the industry met fully the requirements of atomic diplomacy. The Stimson Committee would have little to criticize in the present policies of the Atomic Energy Commission (A.E.C.). As President Truman put it later, the A.E.C. provided "civilian direction which will serve the military needs."[6]

Setting the World Control Pattern

Shortly after Byrnes became Secretary of State, he appointed a committee in January 1946 to draw up proposals for international control of atomic energy. The Anglo-Soviet-American statement on United Nations control was issued on December 26, 1945, at the Moscow Conference of Foreign Ministers, and it was the task of the new committee to prepare American proposals for submission to the U.N.

The body appointed by Byrnes was essentially a continuation of the Interim Committee, with respect not only to policy but also to dominant influence. Bush and Conant, who served with Byrnes in the Stimson group, were appointed to the new body. Two other members assured that the military-monopoly viewpoint would prevail: Major General Leslie Groves, who as head of the Manhattan District had developed a striking affinity for the du Pont chemical trust; and John J. McCloy, erstwhile attorney for the Chase National Bank, and a former Assistant Secretary of War under Stimson. Dean Acheson, at

that time Undersecretary of State, was placed in charge as chairman.*

Acheson in turn appointed a technical advisory committee, which drafted the Acheson-Lilienthal Report, the basis for the Baruch Plan. David E. Lilienthal, later to become the first chairman of the A.E.C., was made head of the advisory group. J. Robert Oppenheimer, the atomic scientist in charge of weapons production at Los Alamos, was a member. To these were added three top corporation executives: Harold A. Winne, vice-president of General Electric; Chester R. Barnard, president of New York Bell Telephone Co.; and Charles A. Thomas, vice-president of Monsanto Chemical Co., which at that time played a prominent role in the atomic enterprise. The first two corporations are solidly within the Morgan empire, while a partner of J. P. Morgan & Co. sits on the board of Monsanto.

The same influence prevailed among the personnel chosen to present the control plan to the United Nations. The initial United States delegation to the U.N. Atomic Energy Commission was headed by Bernard M. Baruch, the "elder statesman" of Wall Street, who in both world wars specialized in industrial military mobilization. Baruch made his fortune as a stock speculator and broker, having been associated during his long business career with the Guggenheim copper interests which are closely linked to the Morgan bankers.

His co-workers on the Delegation to the United Nations, which imposed the Baruch scheme on the majority, were close associates of the Morgan and other financial houses. These included Fred Searls, Jr., vice-president (now president) of Newmont Mining Corp., the Morgan holding concern. Another member was Herbert Bayard Swope, who was assistant to Baruch in the War Industries Board of World War I and is a brother of Gerard Swope, the former president of General Electric.†

Finally among the advisors to the Baruch delegation were both Bush and Conant of the military science hierarchy. The delegation was also to be counseled on manufacturing processes by Groves and, according to the general, by "those in American industry who have made a success of atomic energy,"[7] meaning du Pont and other corporations running the installations of the Manhattan District.

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* The subsequent activities of these gentlemen are interesting. McCloy later served as president of the International Bank until May 1949, when Truman appointed him U.S. High Commissioner in Germany. For a brief period after serving as Undersecretary and before his appointment by Truman as Secretary of State, Dean Acheson returned to his private law practice. In November 1948, he appeared as lawyer for Lammot du Pont, chief of that clan, at the Federal Grand Jury investigation in connection with an anti-trust suit brought against the du Pont group by the Department of Justice.

† Another member was John Hancock, who had been closely associated with Baruch in industrial mobilization during World War II. Hancock is a partner

The international control scheme, prepared by the Acheson-Lilienthal Committee and imposed on the United Nations majority by the Baruch delegation, will be discussed after we have surveyed the nuclear weapons trust as a whole. At this point, it cannot have escaped the reader's attention that the prime policy committees which set the post-war course for atomics were manned prominently by corporation executives and associates of the Morgan monopoly circle. As will be shown, the Morgan interests are the dominant financial force in the struggle for world uranium. Their role in formulating post-war atomic policy was preparatory to the major shift in monopoly control of the atomic enterprise which coincided with the transfer of the project from the Army to the A.E.C. and with the development of the Baruch offensive in the United Nations.

The whole operation displays the earmarks of a co-ordinated drive by the peak Morgan group to seize the dominant positions in the new industry, from raw materials to the finished product. This does not mean to say that any other high monopoly grouping would have acted otherwise. The Morgan group proved more powerful than others, possessing the advantage in the diverse branches of the economy at home and abroad upon which the atomic industry is dependent. The fact that this monopoly group, which stands at the peak of the corporate structure, has emerged as the dominant influence, both in the policy bodies and within the atomic enterprise, reflects the integral connection at the very highest level, between monopoly economics and the monopoly state. State diplomacy and state ownership in conjunction provided the integument within which the transfer of control took place and the subsequent consolidation of the monopoly occurred.

This congealing of monopoly control, at the very time when the United States emerged from World War II as the prime world imperialist power, raised over the world the fearsome specter of atomic war and set loose within the United States the greatest orgy of warmongering ever seen.

A.E.C. as Civilian Front

The post-war consolidation of the atomic monopoly within the United States proceeded behind an elaborate façade of government ownership and Congressional supervision. The final law which emerged from the fight over the May-Johnson Bill established the legal framework of the nuclear weapons combine as a "mixed" state and corporate enterprise.

The ownership of all fissionable material and facilities for its production rests in the Atomic Energy Commission. The five members of this body, appointed by the President and approved by Congress, are theoretically the bosses of the entire industry. They are subject to investigation and general surveillance by a Joint Congressional Committee, and they are obligated to issue semi-annually a report to Congress.

The Commissioners are endowed with unusual power, even for a highly centralized and secretive government agency. These powers are more sweeping than "any department of the government ever before established," according to two students of the constitutional phases of the atomic industry.[8] The Commission is charged with the control and development of the entire atomic industry in the United States, from raw materials to the finished weapon.

The A.E.C. has the right to make contracts with private corporations for the management of the various installations of the industry, and it can also contract with private institutions and corporations for research and development. It licenses private companies for the production and construction of facilities, parts, and equipment utilized in the specialized processes. Except for infinitesimal quantities for research, the ownership of all fissionable material resides in the A.E.C. No producer of source material in the United States can move the ores from his mines without a license. The Commission enjoys

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of the Lehman Bros. banking house, which is engaged alongside Morgan and other monopoly interests in the struggle for world uranium. He is also head of the insurance company bearing his name, which as part of the New England monopoly complex is a principal backer of the business enterprises of M.I.T., and which is also a leading stockholder in Monsanto Chemical Co., an important contractor of the bomb project. In this galaxy of advisers was also to be found Ferdinand Eberstadt, a former partner of Dillon, Read & Co., then heading his own banking investment firm specializing in chemicals, and also chief adviser to James Forrestal, first Secretary of Defense.

absolute power over the export and import of source materials, which it alone can allocate.

The Commission also controls the dissemination of scientific and technical information on atomic energy, which impinges practically upon every scientific sphere. Radioactive isotopes are controlled by this body which has the right to insist upon a full accounting of the use to which the element has been put in industry, research, and therapy. It controls a large portion of government funds for research allocated to universities and private laboratories.

The A.E.C. enjoys the power of appointment of numerous advisory boards, and can also accept or reject their recommendations. Finally responsibility for the fabrication and assembly of atomic weapons and their storage, rests in the Commission.

The vast powers emanating from its responsibility for safety and security provide a pretext for extending the absolute authority of the Commission. The smog of secrecy surrounding the nuclear weapons industry provides the A.E.C. with a convenient cover-all behind which it can act to impose such strict limitations upon what information can be released or discussed that the people have no way of knowing what is actually going on.

This extremely centralized authority, with its secretive and military atmosphere, is made to order for the establishment of silent but effective monopoly control of the new industry. Even the usual Constitutional provisions of checks and counterbalance between the Executive, Congress and the Judiciary, which at best offer no guarantees against monopoly control, have been rendered practically non-operative with respect to atomic energy by the secrecy that clothes the entire enterprise. Under these circumstances the major private interests have unusual freedom of action in establishing basic control of the industry. They find ready at hand an entire apparatus and system of administrative control assuring such a degree of domination as the largest corporations have not yet been able to establish for themselves in any industry.

Actually, the civilian Commission is no more independent of the big corporations and the military than the preceding Army management of the Manhattan District. Since the A.E.C. took over, the atom bomb business has boomed even beyond the wildest dreams of General Groves. Despite the constant protestations of the Commissioners during the period when it was permissible to stress peace that the constructive

aspects of atomics were their constant concern, even the modest beginnings in that direction were sacrificed one after another in the interests of atomic weapons production. The concentration of monopoly control is much greater now than it was in the Manhattan District. The security regulations of wartime were mild compared with the system of thought repression, F.B.I. dossiers, clearance regulations, restrictions of science and research, and military control that now tyrannize the employees of the industry.

The Lilienthal Commission

The central function of the A.E.C. is to provide the necessary civilian and Constitutional front for an enterprise devoted totally to the military program and operated by a combination of monopolists. The Commissioners were chosen accordingly.

David Lilienthal, first chairman of the A.E.C., with his pretenses to liberalism, proved the perfect foil for the militarized monopolies in control of atomics. During the three decisive years when he was chief of the A.E.C., he was fully responsive to the basic policies and practices of the monopoly forces establishing their domination of the atom bomb business. He retreated shamelessly even from the few feeble protests he had made against the constantly growing restrictions upon the freedom of academic research. Despite his services in accelerating the production of atomic weapons and in meeting with zeal the requirements of an administrator of the prime munitions industry, he had also to serve as a whipping boy for the disgruntled monopoly and political interests which for one reason or another were critical of A.E.C. management.

Whatever factional differences may have arisen in the constant intermonopoly struggle for control of the new munitions industry, Lilienthal was an able exponent of the prevailing policies which were established by the Morgan-dominated committees, and which he had helped to formulate. He kept the industry strictly to munitions, subordinating all else. With characteristic moral turn of phrase, he rose to a spirited defense of his stewardship against the attack which finally forced his resignation. He told the Joint Congressional Committee:

"We believe as one man, and the President, our immediate superior, believed that we should let nothing stand in the way of arming this country atomically in such a way as to erect a great deterrent to aggression in the world; that we should establish unquestioned and unmistakable leadership; and in this way thus buy time for reason to prevail." This meant, as Lilienthal proceeded to explain, the building up of a nuclear weapons stockpile as quickly as possible, and refusing "to be distracted by the thousand and one useful things that in a normal enterprise and under normal conditions one's attention might well have gone to."[9]

Upon his resignation early in 1950, Lilienthal took great pains to deny that he was leaving because of the decision to make the hydrogen bomb. Although he had promised to speak freely after his resignation he spoke many words, but little could be found in opposition to the basic policies, and much in full support of what was being done. As first chairman of the A.E.C., his most important function was to impart to this war organization the aura of public service, while inventing the necessary "theories" to fit the fusion of big business and the military. His aptitude for this kind of work was proved before he came to the A.E.C. when, with the help of the Morgan potentates, he had drafted the report on international control which served as the basis for the Baruch Plan.

In his long career as a government business administrator, particularly as chief of the Tennessee Valley Authority, Lilienthal had drawn upon himself sharp attacks from certain private power trusts whose investments were affected by the development of government-owned hydroelectric works. The public impression was thus created that Lilienthal was a fighter in the public interest against the vested interests. But it was generally overlooked that other monopolies, concerned primarily with cheap electric power for industry and the supplying of electrical equipment to industry and the civilian consumer, as well as business interests benefiting from the new navigational and agricultural possibilities arising from the hydro projects, welcomed and supported the new power enterprises. Nor is it generally realized to what extent the interests of the private power monopolies were accommodated by agreements between them and the state-owned works for the joint exploitation of cheap hydro power.[10]

During his term as chairman of the A.E.C., Lilienthal certainly failed to stimulate development of nuclear power for industry. The single project devoted to this end dragged along for almost five years and was then abandoned. When it was no longer possible to ignore certain pressures for developing the new source of power, Lilienthal

appointed in August 1949 an Advisory Committee on Co-operation between the Electric Power Industry and the A.E.C. Obviously, the utility trusts are the least likely to encourage a new power source which might soon render obsolete their capital investment in the existing networks, which had only recently been greatly extended. Yet, on this new advisory body consisting of three members, two are high executives of utility holding systems.*

Thus, the subtly drawn picture of Lilienthal as a disinterested citizen, who had thrown down the gauntlet to the power trust and was therefore especially fit to supervise the atomic enterprise for the public, is without real substance. A state administrator need not have an organic connection with a corporation's board of directors to establish an affinity with a certain monopoly group. It is indeed striking that Lilienthal's tenure as chairman of the A.E.C. coincided with the transfer of the Hanford works from du Pont to General Electric and the subsequent rise of the Morgan group to preeminent place in the atomic enterprise as a whole. It is also an interesting coincidence that after Lilienthal's resignation, when he was under intense fire from certain political leaders, the du Pont trust returned to take charge of a new A.E.C. center for the production of the nuclear elements of the hydrogen bomb.

Throughout the upheavals which kept reflecting the struggle for power within the Atomic Energy Commission, a certain pattern emerged. In terms of personnel, it presented a more or less faithful replica of the intermingling of militarized science, state administration, public apologetics, and monopoly control typical of the entire atomic phenomenon. Thus, the first science member was Dr. Robert F. Bacher, who had been in charge of the Bomb Physics Division of ordnance inspection for the Navy. He had been connected with the investment firm since 1919, and became a partner in 1929.

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* Philip Sporn, president of American Gas & Electric Co., who was made chairman of the advisory body; and Edward M. Morehouse, vice-president of General Public Utilities Corp. As was to be expected, the report finally submitted by Sporn's committee after a two-year survey had nothing constructive to offer. The report expressed prime interest in the "domain of utility economics," by which was meant control over any effort to apply nuclear power for utility purposes. The committee's main proposal was for the establishment of a permanent advisory committee of the A.E.C., to consist of top executives of the utility trusts, which would keep the industry informed of such technical developments as might affect the prospects for atomic power. The services of 13 technicians attached to the utilities were also offered the A.E.C. The principal objective of these proposals is to place the power trusts in a better position to control in their own interests whatever potentials may materialize in the field of atomic power.

Strauss is obviously a man of many important connections, in the scientific and political world as well as the economic. As president of the board of trustees of the Institute for Advanced Study at Princeton, of which Oppenheimer is the director, he no doubt impresses the scientists gathered at this center of nuclear research with his own extreme political views. Early in his career he began political-diplomatic activities after World War I as an assistant to Herbert Hoover in the Belgian, French, German, Austrian, and Russian relief organizations. During the Finnish-Soviet War of 1939-40, he organized the Relief Fund for Finland, the cover organization for military and political support to that country, in the hope that World War II, which had already been inaugurated by Hiter, could be turned into a general anti-Soviet conflict. His general position on the paramount question of peace after World War II is adequately summarized by Strauss himself before the Joint Congressional Committee: "My observation is that international friendships are ephemeral."[15] In a discussion of foreign policy he compared the present state of American-Soviet relations to the period "back in 1939 when it became apparent that we were in a 'cold war' with Germany."[16]

As is to be expected, Strauss's influence within the Commission was always exerted in the direction of closer ties with the military, greater secrecy of operations, and the utmost restriction of scientific investigation and discussion. Thus, he was the only commissioner to oppose exports of isotopes, on the ground that they could be used in industrial and military research. He placed as much emphasis upon their possible industrial as military use, citing especially their potential value to the petroleum industry in cracking processes and to metallurgical research for the production of new alloys.[17] He was among the foremost advocates of the hydrogen bomb and the speeding of nuclear weapons output in general. In accepting his resignation, President Truman eulogized Strauss in glowing terms, citing among other things, "Your broad acquaintance among men of economic and scientific competence has enabled you to draw experts of diverse talents to the advisory groups" of the A.E.C.[18]

How Strauss may have thrown his weight in the intermonopoly competition within the A.E.C. is not quite clear. Traditionally, Kuhn, Loeb & Co. has concentrated its interests chiefly in the railroads, where its influence exceeded even the power of the House of Morgan. While the banking house has had tacit status quo understandings with the Morgan group in the sphere of railroads, such industrial and banking connections as it has developed have been clearly outside the Morgan sphere.* At the same time, families connected with Kuhn, Loeb & Co. are to be found in mining enterprises along with Morgan corporations.

With this background, Strauss might have been cast for the role of a good will ambassador among the contending groups in the nuclear weapons business. That he was not impartial is indicated by his activities after he left the A.E.C. In June 1950, Strauss became financial adviser and consultant to Rockefeller Bros., Inc., the investment house of the four sons and one daughter of the present head of the dynasty. The firm specializes in "new enterprises," among which nucleonics must necessarily figure. With his background in the A.E.C., Strauss is well equipped to aid the Rockefellers in their efforts to branch out more widely in the field of metals, including uranium, as well as in the nuclear weapons business in general.

New members brought into the A.E.C. in 1950 have mixed corporate backgrounds. Commissioner T. Keith Glennan is a military science administrator and business executive, while Thomas E. Murray is an engineer and corporation financier. In the past, Glennan had long-term connections with Morgan companies, while Murray's principal ties seem to place him in the monopoly complex identified with Oak Ridge operations.†

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* Kuhn, Loeb has maintained a substantial if not guiding influence in the General American Transportation Co., a leading producer of railroad equipment, and in the Bank of the Manhattan Co., a billion-dollar New York bank. It participates directly in Western Union Telegraph, where Rockefeller influence is also strong; in Mellon-Rockefeller-controlled Westinghouse Electric, chief rival of General Electric, and in the du Pont-controlled U.S. Rubber Co.

† Glennan came directly from his post as president of Case Institute of Technology at Cleveland. While at Case he was also deputy chairman of the committee on ordnance of the Military Establishment, and during the war he directed the Navy's underwater sound laboratory. Before the war, as a specialist in moving-picture sound equipment, he served for over eight years with the research subsidiary of Western Electric Co., the Bell system affiliate which is now in charge of a key atomic weapons center. Prior to becoming president of Case in 1947, Glennan was for two years an executive officer of General Aniline & Film Co., the disguised American I. G. Farben organization sequestered by the government during the war.

Murray headed his own electrical equipment firm in New York. Until his appointment as Commissioner, he was a trustee of the Bank of New York, which is apparently controlled jointly by Morgan and Rockefeller associates, With these changes, the A.E.C. was rid of the controversies which had surrounded Lilienthal, and also of the various liberal and pacifist pretenses which had hampered the munitions enterprise during his tenure. Three of the five Commissioners had solid corporation backgrounds, the science member was the trusted historian of the bomb undertaking, and the chairman was entirely "safe," to the satisfaction even of the most obscurantist Congressman. Top management was also reorganized under a new General Manager—M. W. Boyer, for many years a high executive of Esso Standard Oil. "Businesslike" was the word most commonly used in the monopoly press to welcome the "new team." Under its direction, the second cycle of expansion of the weapons enterprise was initiated, including the hydrogen-bomb project, and by the end of 1951 talk was rampant of still another and even greater expansion.

At the top, the Commission is an admixture of the chief ingredients of the administrative structure as a whole. The various departments of the A.E.C. center, its field offices, and National Laboratories present a similar combination of military and industrial scientists, corporation executives, and state administrators. The A.E.C. apparatus itself represents only a part of the total structure of control, for the entire organization is paralleled by the intercorporate network of the monopolies operating the industry under contract from the Commission. A sort of dual control apparatus, therefore, runs throughout the enterprise, one state and the other corporate, but very closely interlinked by personnel and common functions. They are dual not in a contradictory sense, in that one opposes the other, but rather as expressing a certain division of function. Aside from its political role in providing the façade for monopoly control, the A.E.C. apparatus also serves as the means of co-ordinating and integrating the many branches of the industry, as a sort of supercartel organization endowed with the authority of the state.

In general, it is not difficult to find in key government departments personnel deriving directly from the trusts, since this is an aspect of the inner fusion of the state with monopoly. In the last decade, this process has permeated the whole governmental-corporative structure so thoroughly that one need only rub a state administrator to expose

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and a director and member of the finance committee of Chrysler Corp., among the Big Three auto trusts. Chrysler is not obviously associated with any of the peak monopoly groups, but it does have direct and important connections with the financial group controlling Union Carbide & Carbon Co., as will be seen in Chapter 7.

its corporate being. The subornation of the state is especially marked in the entire field of atomics, despite the widespread illusion that government ownership of the atomic industry in some mysterious fashion rises above the monopoly control of the economy as a whole and of atomics in particular.

We have seen how the top policy-making bodies were dominated in 1945 and 1946, by the peak monopoly groups at that time preparing to play the preeminent role in the atom bomb business. At the head of the entire administrative apparatus of the atomic industry, the Commissioners, endowed with extraordinary powers, were entirely responsive to the needs of the "mixed" state and private enterprise, whether in their role as administrators, or as scientists, or as delegates of the corporate community. The frequent replacement of atomic commissioners is due not only to the legal provisions for staggered terms, but more fundamentally to the intermonopoly struggle for control. This struggle appeared also in the instability of personnel throughout the enterprise during the first three post-war years, although the instability reflected also a rebellion of the scientists against the militarization of atomics, and the constant commutation of corporation executives between their companies and posts within the A.E.C. apparatus.

3. Control by Committee

A NETWORK OF committees and boards covers the entire framework of control provided by the A.E.C. and its apparatus. Whether as permanent advisory and operating bodies or as temporary panels appointed for specific tasks, these committees allow the closest interplay between government agencies and corporation boards in all phases of the nuclear weapons enterprise.

At the top of the committee labyrinth are three semi-independent bodies which work directly with the Commission. Established by the same law that set up the A.E.C., they are appointed by authorities outside the Commission itself. Although each serves a specific function, in practice they have worked as one to accelerate the militarization of the entire field of atomic energy. These statutory bodies are the Joint Congressional Committee on Atomic Energy, the Military Liaison Committee, and the General Advisory Committee.

Congress as "Watchdog"

Only one of these peak committees is directly responsible to an elected body. Composed of selected members of both House and Senate, the Joint Committee on Atomic Energy is supposed to act as the "watchdog" of the people's interests in the atomic enterprise. Its assigned task is to keep the work of the A.E.C. under constant surveillance, and it has, at least theoretically, the power to investigate all phases of operations.

Actually, the Joint Committee is part of the elaborate front of civilian control, so carefully constructed to conceal from the people the total militarization of atomics. During the first three years of this system the Joint Committee, reflecting the situation in Congress, has been under both Democratic and Republican leadership. But there has been little difference in basic policy under the chairmanship of Senator

Brien McMahon, the Democrat, or Senator Burke B. Hickenlooper, the Republican.

The latter has leaned most heavily toward straightforward military control, more secrecy, and greater speed in the armaments race. Having a more cautious approach, Senator McMahon has at times expressed grave concern over the dangers to the United States of an atomic war. He also showed on occasion some anxiety about the popular distrust of atomic diplomacy and the suppression of accustomed civilian freedoms. However, these qualms were not permitted to interfere with militaristic aims of the weapons enterprise. It was under McMahon's leadership that the Joint Committee approved the greatest expansions of the atomic program, and endorsed the President's decision to proceed with the hydrogen superbomb. Whichever political party was in charge, atomics remained the supreme munitions industry, controlled by the monopolies, and the Baruch scheme was the last word on international control.

Aside from satisfying certain Constitutional fetishes to help maintain the deception that atomics is a public enterprise, the Joint Committee played a secondary role in the actual formulation of policy. In numerous public hearings and so-called investigations, it became the sounding board for the extreme reactionary elements seeking to eliminate the slightest symptom of peaceful purposes from the atom bomb business. For the most part, the Joint Committee sought assurance that the undertaking was producing atom bombs at the maximum speed and that the sights were set upon the development of even more terrible weapons. For the rest, it set itself up as yet another inquisitorial body, ferreting out from the atomic enterprise and associated research anyone tainted with a progressive thought, and thus contributing to the phantasmagoria of spy scares and red hunts.

Even if it wished, the Joint Committee was in no position to consider intelligently the real problems of national security, with which it was supposedly concerned. Senator McMahon did not know the size of the atom bomb stockpile, nor the rate at which bombs were being produced, as he admitted in a public address on January 31, 1949: "Though I have been a member of the Joint Congressional Committee on Atomic Energy since its inception and though I have just been elected its chairman, I do not myself know how many bombs we possess or how rapidly we are making new ones."[1]

Of course, the Joint Committee knew very well that the enterprise for which it assumes public responsibility is devoted entirely to weapons. If the Congressional body did express an interest from time to time in some other utilization of atomic energy, it was only to make certain that nothing was diverted from the military stockpile. But it was a farce to pretend the Joint Committee has any real authority, when it does not possess the power to control the deadly weapon, or even to determine at what rate it should be produced.

Evidently, Senator McMahon in time became better informed. In a speech to the Senate on September 18, 1951, he urged all-out production of atomic weapons, both strategic and tactical, as the core of military mobilization. An annual A.E.C. budget of $6 billion would be enough, he claimed, to prepare *"Der Tag"*—"The day is coming when the quantity of atomic weapons we are capable of making could be sufficient, beyond any question, to serve as the paramount instrument of victory." Indeed, the chairman of the Joint Committee had found a panacea for the ills afflicting the country, especially the economic chaos threatened by the stupendous costs of the conventional arms budget. This could be cut drastically, according to the Senator, if only we were to break with outworn military traditions and acknowledge the supremacy of the new weapon. "The paramount instrument" would assure victory at bargain rates!

Arm of the Military

If the chairman of the Joint Committee had to profess ignorance at one time about the bomb stockpile and the rate of weapons production, the National Defense Establishment was in full possession of the facts, which were kept not only from the people but from the elected authority supposedly charged with safeguarding the national interest. In effect, the Congressional body became merely a watchdog over the production of nuclear weapons, while the real power of decision rested elsewhere.

In the "compromise" of the fight over military or civilian control, on the basis of a formula suggested by Senator Vandenberg, the atomic energy law passed by Congress in 1946 established the Military Liaison Committee. Consisting of appointees of the armed forces, this committee was placed practically on an equal footing with the Commission itself.

According to the Atomic Energy Act, "The Commission shall advise and consult with the Committee on all atomic energy matters which

the Military Liaison Committee deems relate to military applications, including the development, manufacture, use, and storage of bombs, the allocation of fissionable material for military research, and the control of information relating to the manufacture or utilization of atomic weapons." Since the Military Liaison Committee is here given the authority to decide what matters the Commission must discuss with it, and since the enterprise is in any case totally devoted to weapons, the military agency from the very beginning became the most powerful body of the entire enterprise, even exceeding in real authority the commission itself. Moreover, according to the Act, the Director of the Division of Military Application of the A.E.C. must be a member of the armed forces.

In practice, the National Defense Establishment has more to say about atomic energy than any other department of the federal government. This is a consequence of the growing power of the military within the government in general, resulting from the unification of the armed forces and the creation of the central defense department in the autumn of 1946. The militarization of atomics, together with the establishment of a powerful central military authority, contributed heavily to the sharp reactionary turn in the country. The civilian A.E.C. was entirely subordinated to the military establishment.

How this works out in practice was revealed by members of the A.E.C. at public hearings of the Joint Congressional Committee. At least once a year the President fixes the requirements of weapons production, on the basis of a joint report by the chairman of the Commission and the Secretary of Defense. After setting of the weapons quota, and after extensive consultation with the National Military Establishment, the Commission then determines how the program is to be carried out. Major responsibility for execution is assumed by the weapons branch at Los Alamos, New Mexico, which is directed by the army officer in charge of the A.E.C. Division of Military Application. This official's staff consists of members on active duty in all branches of the armed services, together with some civilians. He is also primarily responsible for liaison with the National Military Establishment. As an A.E.C. official put it, he is the "focal point" for day-to-day relations with the Defense Department.[2]

It then becomes the prime and overriding function of the A.E.C. to mobilize the entire enterprise for the fulfillment of the goal. All else is peripheral and relatively unimportant—whether it be basic research for other than purely military purposes or the development of the existing technique for the production of power useful to industry.

That situation prevailed from the very beginning of "civilian control." The Atomic Energy Commission assumed responsibility on January 1, 1947, when it took over the enterprise from the Army. Even before the Commission held its first preliminary meeting on November 13, 1946, the members had recognized the paramount interest of the armed forces. According to the first report of the Commissioners, "informal contact between members of the Commission and the Military Liaison Committee was established prior to the Commission's first meeting." They considered jointly the problem of organization, procedures, transfer of the enterprise from the Manhattan District, production of fissionable materials, security, and research programs.[3]

By the middle of 1947, the Military Liaison Committee and its staff were lodged in the headquarters of the A.E.C. in Washington. According to the second semi-annual report of the Commissioners, "Through consultation with the Military Liaison Committee, the Commission is coordinating its programs with the military requirements and programs of the War and Navy Departments." And the co-ordination had broadened out to cover a wide range of atomic activities. "Discussions between the Commission and the Committee," said the report, "are not confined to matters of direct military applications but cover many other major activities of the Commission."[4]

The coverage must have been quite inclusive, for during 1947 it was found necessary to hold no less than 22 formal joint conferences between the Commission and the Military Liaison Committee, in addition to numerous staff and informal meetings. Again the Commissioners reported that "Working relationships . . . were much broader than the activities involved in establishing and meeting military requirements." According to the listing by the Commissioners, these activities included the major phases of the enterprise, the military also providing help in obtaining the "participation of industry in the atomic energy program."[5]

The military continued to have every reason for complete satisfaction. By the end of 1949, the Commission's activities had been co-ordinated even more closely not only with the military activities but also with military training. In their seventh semi-annual report, the Commissioners boasted, "The continuous and extensive work on mutual problems by the staffs of the two agencies [A.E.C. and Military Liaison

Committee] contributed substantially to effective co-ordination of Department of Defense and Atomic Energy Commission activities."[6]

As a final appraisal, one may cite the glowing terms in which Lilienthal described the militarization of atomics at a meeting of the Joint Committee. He referred to the co-ordination of the Commission and the Military Committee as "one of the most remarkable unifications of staff that I know of in any enterprise." And he spoke of the "interweaving of the two organizations in order that their views on all kinds of matters may be known at the earliest possible stage." This feeling was reciprocated by the Military Liaison Committee, which expressed to the Joint Committee "full satisfaction in the way the liaison arrangement had been and was working out."[7]

Far from being a committee *of* the A.E.C., subject to its authority, the Military Liaison Committee is in effect *above* the Commission, the agency of the National Military Establishment within the atomic enterprise to oversee a program predetermined by military requirements.

The military, of course, do not stand alone. They do not have the characteristics of a group with an independent social base, differentiating them from other classes. Two world wars within three decades, and moreover wars which required on an increasing scale total industrial mobilization, brought the upper ranks of the armed services well within the orbit of the dominant monopoly groups. In the two world wars, the merging of military brass with big business was greatly accelerated. Corporation executives, either in uniform or as civilians, took direct charge of industrial mobilization for war, and also of the armed services departments of the government. Presidents and directors of banks and corporations became generals and admirals overnight, while professional military officers appeared increasingly in the role of corporation executives as soon as the war was over. This interchange of personnel between the corporations and the armed forces became a marked feature of American affairs especially as a result of World War II. It is not uncommon to find retired generals and admirals in high executive posts on the corporations and trade associations with which they dealt during wartime, and a select number are also to be found, alongside their business associates, among the trustees of institutions of higher learning.

The fusion of the military with big business is epitomized in the National Military Establishment, which resulted from the post-war reorganization. The first Secretary of Defense, James Forrestal, was a former president of Dillon, Read & Co., a leading firm of investment bankers. He was followed by Louis Johnson, an executive director of Consolidated Vultee Aircraft, for long a favorite contractor of the armed forces. Johnson was succeeded by General Marshall, the first professional soldier to hold that civilian office. During his brief interlude as a private citizen, Marshall had become a director of Pan American Airways. Also among the civilian secretaries and undersecretaries of the armed services are to be found high-placed corporation executives, while the various agencies concerned with procurement, industrial mobilization, and defense planning are manned by other corporation moguls.

Naturally, the Military Liaison Committee carries this fusion of interest directly into the atomic enterprise. The Liaison Committee is appointed by the Secretary of Defense, and consists of two officers on active duty from each of the three service branches, while its executive secretary is also a high-ranking military officer. The membership and staff of the Liaison Committee is overwhelmingly military, but it is "augmented by civilians prominent in science and industry," according to an official report by Secretary of Defense Forrestal.[8] Since the beginning of 1948, the Military Liaison Committee has been under a civilian chairman. The first two were high corporation executives.*

The military forces also have their own exclusive operating department within the A.E.C., known as the Division of Military Application, which is headed by a general and supervises the weapons program. This division has been granted the power under the atomic energy law to make military research contracts independently with private corporations and institutions.

The Military Liaison Committee, therefore, is the guiding arm within the A.E.C. not only of the military, but of the military in closest association with the topmost monopoly groups.

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* The first civilian chairman was Donald F. Carpenter, vice-president of the Remington Arms Co., a du Pont subsidiary. Carpenter was soon advanced to the more powerful post of chairman of the Munitions Board, and his place on the Military Liaison Committee was taken by William Webster, vice-president of the New England Electric System who had served for a time under Vannevar Bush in the initial phase of the atom bomb project. In February 1950, Webster became chairman of the Military Research and Development Board and was succeeded on the M.L.C. by Robert LeBaron, a retired army general.

Control by Advice

Control by advice is a time-honored method of the corporations in penetrating state agencies and enterprises. The atomic industry is thoroughly permeated with advisory bodies. Only one of these, the General Advisory Committee, is appointed by the President (confirmation by the Senate not being required) to advise the top Commission on scientific and technical matters. The others are appointed by the Commissioners or their deputies.

The A.E.C. lists 17 advisory committees and four boards as part of its supervisory structure. Besides these, there are numerous temporary advisory bodies, attached to the branches, departments, and special undertakings of the A.E.C.

An official report by a government body charged with an investigation of scientific policy must admit, however reluctantly, the business role of the advisory bodies in all military work, including the atomic enterprise.

"Advisory committees," it says, "are influential in awarding contracts, commonly negotiated without competitive bidding. Since the outstanding scientists of the country are frequently associated with the largest industries and universities, institutions engaged in or attempting to secure contract work often have officers or employees who sit upon the program planning and evaluation committees."[9]

The function of these committees, therefore, is considerably more than advisory. Such advice as is given by the specialists attached to the corporations or their institutes has the ultimate aim of strengthening the interests with which they are associated. This may be expressed in multiple ways, for even decisions concerned with pure research or with matters not immediately connected with a practical operation may affect the relative position of this or that trust in the entire complex of corporate relations.

At the very peak, the General Advisory Committee typifies the fusion of militarized science and monopoly. In terms of personnel, the Advisory Committee includes in about equal parts three components of this fusion: research executives of corporations, administrators of weapons research, and nuclear scientists. It is sometimes difficult to distinguish which function dominates in a particular individual, a problem which will be examined in a separate chapter. But of these categories, the corporation executive stands out most clearly.

Of the nine members of the committee, usually two or three are corporate research directors. A constant member has been Hartley Rowe, chief engineer and vice-president of United Fruit Corp., the giant banana and shipping monopoly of the New England capitalists with vast plantations in Central America and the West Indies. As special assistant to Conant in the Manhattan District, Rowe participated intimately in the direction of the weapons center at Los Alamos[10] and has remained active in the project since then. Serving with him on the committee until the latter part of 1948 was Hood Worthington, head of the Carothers Research Laboratory of the du Pont chemical trust. He was replaced by Oliver E. Buckley, president of the Bell Telephone Laboratories, then about to take over the management of the Sandia weapons center in New Mexico. In August 1950, President Truman added to the G.A.C., Eger V. Murphree, president of Standard Oil Development Co., who had played a prominent role in the initial phase of the bomb project and whose company was becoming influential in the new reactor development center at Arco, Idaho.

Alongside these delegates of the principal monopoly groups contending for control of atomics, sat leading administrators of militarized science, including the ubiquitous James B. Conant of Harvard and President Lee A. DuBridge of California Institute of Technology. Dr. J. Robert Oppenheimer, who won his spurs as head of the bomb laboratory at Los Alamos during the war and was rewarded with the post of director of the Institute for Advanced Study at Princeton, became chairman of the General Advisory Committee. These were joined first by Cyril S. Smith and later by Willard F. Libby, scientists and administrators of the nuclear institutes at the University of Chicago, which are subsidized largely by Rockefeller and associated monopoly groups. The committee also included the physicists Enrico Fermi and I. I. Rabi, the former at the Institute of Nuclear Science at Chicago and the latter at Columbia University; Glenn T. Seaborg, the chemist of the University of California at Berkeley, which manages the A.E.C. Radiation Laboratory and the Los Alamos weapons research center; and Walter G. Whitman, of M.I.T.

Thus, the universities and corporations close to the monopoly groups active in the atomic enterprise are well represented by the administrators and scientists gathered in the General Advisory Committee. While this body helps maintain the flow of A.E.C. research and operating contracts within the small circle of big-name institutes and giant corporations, its role with respect to policy has remained advisory, with the power of decision resting in other, more powerful agencies.

The inner controversy over the hydrogen bomb exemplified this. According to *Business Week,* which publishes its own periodic review of the atomic industry, the top advisory group in the autumn of 1949 recommended that no substantial effort be undertaken to make the hydrogen bomb, on the ground that this might interfere with the production of the existing type of atomic weapon. This view was forwarded by the A.E.C., together with a technical report on the feasibility of the new weapon, to the White House, where the contrary view of the Department of Defense prevailed.[11] Some prominent American scientists, including former Commissioner Dr. Robert F. Bacher,[12] came out against the new terror weapon. But not a single member of the General Advisory Committee opposed it publicly, unless Oppenheimer's passing criticism (on a radio program) of the secrecy by which the people are barred from participation in such vital decisions can be taken as a feeble protest against the executive order to proceed with the weapon.[13]

In due course, in connection with various phases of nuclear production, we shall examine the corporate connections of other important advisory panels. At this point, we turn to a committee which plays an unusually important role in the world-wide struggle for control of uranium.

Uranium Strategy

Control of raw materials provides a vantage point that no monopoly group seeking to dominate atomics can afford to ignore. In this respect, the Raw Materials Division of the A.E.C. commands key approaches to the uranium resources of the world.

Since domestic sources are only secondary and are already well monopolized, the struggle for uranium is concerned with control of the Canadian and Belgian Congo mines and with the feverish hunt for new deposits throughout the world. An authoritative review of recent developments in the field of raw materials characterized the present drive for control of strategic minerals as "the greatest ore search in history," and found that "uranium-ore developments occupy the center of the stage."[14] Accordingly, the monopolists entrenched in the top raw material bodies of the A.E.C. are well placed for exploiting new discoveries and utilizing the diplomacy of raw materials to penetrate the older fields already controlled by rival combines.

The Morgan group immediately secured the supreme positions. John K. Gustafson, the first manager of the A.E.C. Raw Materials Division (later the Raw Materials Operations Office), stepped into the post directly from Newmont Mining Corp., where he was employed as a geologist. He was surrounded quickly with his old associates. In October 1947 an Advisory Committee for Exploration and Mining (now the Advisory Committee on Raw Materials) was appointed. Of the eight original members, six were associated directly or indirectly with Morgan enterprises.

Four Morgan men came from the copper trusts. Gustafson's former employer, Newmont Mining, the chief holdings of which are in copper, was represented by its president, Fred Searls, Jr. Dr. Anton Gray, chief geologist of Kennecott Copper Corp., and G. Temple Bridgman, consulting mining engineer of Guggenheim Bros. from 1916 to 1940, were also appointed. The Guggenheims and the Morgan bankers together control Kennecott. These were joined by Robert E. McConnell, a former director of Rhokana Corp. (one of the combines controlling African copper), in which Newmont and J. P. Morgan & Co. have heavy investments.

Another adviser was Wilbur Judson, vice-president and director of Texas Gulf Sulphur Co., which was organized by Newmont and the Mellon family, the latter selling out half its one-third stock interest in 1948. In addition to a partner of J. P. Morgan & Co. and the chairman of Newmont, the board of the sulphur company boasts Herman B. Baruch, brother of the atomic diplomat and himself a former American ambassador. In this clique of Morgan mining advisers one might also include Clyde Williams, the director of Battelle Memorial Institute.*

Donald H. McLaughlin, chairman of the Advisory Committee, is president of Homestake Mining Co., the leading American gold producer, with which Gustafson had been connected before his employment by Newmont. In addition to gold mines in the United States,

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* Battelle is probably the largest private industrial research institution in the United States, specializing in metallurgy and in processes for the recovery of valuable constituents from ores. It does contract research for the A.E.C., but its principal work is for private corporations. Before coming to Battelle, Williams was connected with Columbia Steel Corp., a subsidiary of U. S. Steel.

Homestake has manganese properties in Lower California (Mexico), and a substantial interest in the Mexican properties of Cerro de Pasco Copper Corp., of which a major stockholder is American Smelting & Refining, the Guggenheim-Morgan combine.*

The close link between Homestake and the Phelps Dodge copper corporation is personified by Lewis W. Douglas, who was a director of the gold mining company at the time of his appointment as ambassador to Britain. James S. Douglas, father of the ambassador, was associated from an early date with Phelps Dodge, which dominates the Arizona copper mines. James Douglas, brother of the ambassador, is secretary of Phelps Dodge, one of the big-three copper trusts controlled by the Morgan monopoly group.

Soon after becoming chairman of the Advisory Committee, McLaughlin was appointed a director of International Nickel Co., Ltd., of Canada, the most powerful mining combine in the dominion and an important factor in the struggle for world uranium. The leading monopoly groups at the peak of the world corporate structure participate in International Nickel. At the same time, George C. Bateman, having a long background of association with International Nickel's mining interests in Ontario, was appointed chairman of the Advisory Committee on Mining of the Canadian Atomic Energy Control Board.

One member of the original A.E.C. Advisory Committee on raw materials did not owe prime loyalty to the Morgan monopoly group. Everette L. DeGoyler, oil geologist, is connected with the enterprises of Dillon, Reed & Co., which is close to the Rockefeller interests.†

Despite shifts in the Advisory Committee, the original pattern did not vary. Faces changed but Morgan control remained.‡

In detailing the corporate position of the top A.E.C. advisers on raw materials we have perforce also named some outstanding leaders of atomic diplomacy. For it turns out that the coterie of interests dominating the raw materials section of the A.E.C. and seeking world control of uranium was also in charge of the American delegation to the

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* William Randolph Hearst, the late pro-fascist newspaper publisher, was also an important stockholder in both Homestake and Cerro de Pasco.

† DeGoyler was chosen by the American Petroleum Institute to testify as its witness at the pre-war investigation of monopoly practices, conducted by the Temporary National Economic Committee. During the war he headed the oil mission to the Middle East, which resulted in the expansion of the holding of Standard Oil (N. J.) in Saudi Arabia.

‡ As the committee stood in 1950, McLaughlin was still chairman, and three

U.N. Atomic Energy Commission. Bernard Baruch's long background in the Guggenheim-Morgan copper circle has already been indicated and we ran across Searls of Newmont as an adviser to Baruch. We now discover that Baruch's brother, also a diplomat, is a director of a Morgan-controlled mining corporation which has been represented on the raw materials advisory body since its inception. We also find that ex-Ambassador Douglas comes from a family long connected with Phelps Dodge. And Baruch was followed as American spokesman at the U.N. by General Frederick Osborn, whose father has long been a director of that very same Phelps Dodge Corp.

One may well wonder whether Newmont Mining Corp. is a holding company of minerals stock or of diplomats, considering the role of president Searls in the A.E.C. and at the U.N., or the appearance of James F. Byrnes and General Lucius Clay on its board of directors. And through International Nickel Co., which commands the chairmen of the raw materials advisory boards in both the United States and Canada, no less a personage than John Foster Dulles, for long a director of that trust, is brought into the uranium rush.

The Advisory Committee on Raw Materials epitomizes the real content of "public ownership" and American atomic diplomacy, the connection between the corporations reaching for world control of atomics and government policy as these have evolved since the end of the war. The entire structure of control, from the initial policy-making bodies through the A.E.C. apparatus and the special committees, is the same admixture of state and corporate authority into which have been fused science and the military.

other original members remained: DeGoyler, Judson, and Williams. Two Morgan copper men were replaced by two Morgan steel men: Walter L. Maxton, vice-president of Oliver Iron Mining Co., a fully-owned subsidiary of U.S. Steel, and Ernest H. Rose, chemical engineer of Tennessee Coal, Iron & Railroad Co., another U.S. Steel unit. Gustafson, who resigned as chief of the Raw Materials Operations Office at the end of 1949 to be replaced by his deputy director, also was made a member of the Advisory Committee, having become consulting geologist for M. A. Hanna Co., of Cleveland. Two copper geologists on the initial body were replaced by two copper mining engineers: Thorold Field, a former director of Northern Rhodesia copper companies, and a board member of Case, Pomeroy & Co., of which Commissioner Sumner Pike was a vice-president and director; and Orvil R. Whitaker, who was formerly employed by Anaconda Copper Co. and the Guggenheims. To these were added Walter O. Snelling, director of Trojan Powder Co., a munitions and research firm of Allentown, Pa., with vague corporate connections.

4. Control by Contract

LEGAL OWNERSHIP OF the nuclear weapons business resides in the government, but the industry is operated by private corporations. This is the basic policy determining the present relationship between the state and monopoly in the atomic enterprise.

Big Business as Contractor

The principle of government ownership and corporate management is embodied in the Atomic Energy Act of 1946, which conferred upon the Commission the power to contract out to private companies the actual operation of the enterprise. At the same time, Congress took great pains to make clear that no contradiction was to arise between state ownership and the interests of private capital.

Replete with admonitions to protect and encourage "private enterprise," the Atomic Energy Act bears witness to the zealous concern of Congress for the inalienable rights of the corporations. The A.E.C. was forewarned that it must carry on the atom bomb business with proper attention to the "strengthening of free competition in private enterprise." In these and other phrases, which pay lip service to anti-trustism, Congress was in effect saying that government ownership must not be interpreted in any way harmful to the interests of private capital. Once having made this clear, Congress comfortably closed its eyes to the monopolization of the government-owned atomic industry by a few very big trusts.

In the many investigations by the Joint Congressional Committee not a single session attempted to probe the kind of "free enterprise" running the industry.* The investigators as well as the investigated expressed glowing satisfaction that the Commission had left operations to the private corporations. In fact, Congress remained untroubled just as long as it was certain big business ran the show. To be sure, protests were heard from time to time that the industry was too closely held by a few giant trusts, but these were inspired largely by the corporations on the outside clamoring to get in, or by interests not satisfied with their share in the nuclear weapons combine. The necessity for extreme security could always be patriotically put forth to justify keeping the enterprise within the chosen circle.

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* According to an analysis submitted by the A.E.C. to the small business committees of the House and Senate, during the nine months ending March 31, 1951, small business (firms with less that 500 workers) received less than [illegible] percent of all prime contracts (in value), and 23 percent of all subcontracts. Of $447 million in prime contracts, big business got 90 percent, while another [illegible] percent went to research and educational institutions. (*Tenth Semiannual Report*, p. 55.)

The new law meant that the pattern established under Army supervision was to continue under so-called civilian control. No doubt was left on this score when the Atomic Energy Commission took over the atom bomb business from the Army in January 1947. In a speech at Amherst College on January 6, 1947, the newly-appointed General Manager of the A.E.C., Carroll L. Wilson, stated:

"The Commission decided as a matter of policy that wherever practicable it would make arrangements with private organizations for the operation of plants, laboratories, the construction of new plants, of new reactors, for the development of the materials and equipment involved in the atomic energy business."[1]

This guiding policy was restated even more concisely by Wilson, when he told the Joint Congressional Committee that the enterprise was run on the theory "that we should develop as fully as possible the method of operating through contractual relations with private organizations. . . . The Commission has looked to the *basic policy of contractor operation* as a means of developing wide and alert participation in the program by a growing number of private organizations, both academic and industrial."[2] (Emphasis mine—J.S.A.)

While participation is far from wide, "the basic policy of contractor operation" is followed faithfully. Chairman Lilienthal stressed emphatically in hearings before the Joint Committee that the same basic policy followed under the management of General Groves was continued by the Commission. It was not the policy, he declared, to have the government "operate these industrial-type activities directly, but to get the best industrial talent the country can afford," meaning General Electric, Union Carbide, and other monopolies actually in charge of operations.[3]

The continuity of policy was assured in no small degree by the M.I.T. hierarchs who played a leading role in both the Manhattan District and in the A.E.C. The Advisory Board on Contractual Relationships, which was established in 1947 to formulate a policy for the A.E.C., consisted of four members, of which two were M.I.T. professors and a third was the director of the patent management division of Research Corp. of New York, an M.I.T. business enterprise. The latter post had previously been held by Carroll Wilson, who had been trained as an engineering administrator at M.I.T. and became the trusted assistant of Compton and Bush in their pseudo-scientific business ventures. When these military science administrators came into the weapons agencies during the war, they brought Wilson along as their deputy. It was on the recommendation of Compton that he was appointed to the highest executive post of the A.E.C. Wilson therefore carried forward into the "civilian" atomic project the contractual policies which had been established in the wartime weapons agencies.

The best authorities on the operating policy of the atom bomb business are the atomic commissioners and managers. Investment banker and Commissioner Strauss stated boastfully: "The whole atomic enterprise today is operated by American industry. The A.E.C. actually operates nothing but its Washington headquarters and branch offices. Uranium-bearing ore is mined by private industry, refined by private industry, and every step in the enterprise is in the hands of industry. . . . It is a government monopoly only in so far as the ownership of the raw materials and the utilization of the finished product is concerned. All operations are conducted by private industry."[4]

In the operation of the industry the corporations enjoy real autonomy. General manager Wilson makes this quite clear. As the highest official in charge of handling and supervising contracts, with considerable previous experience as an administrator of M.I.T. business enterprises and as assistant to Vannevar Bush on the central government weapons research agency during the war, Wilson should be a reliable authority on this matter. In his exposition of the A.E.C. working policy before the Joint Committee, Wilson proclaimed, "It is the desire and intention of the Commission to give encouragement to the exercise by the contractor of its own initiative and ingenuity." The extent to which the corporations exert their "own initiative and ingenuity" is indicated by the relations between the various offices of the A.E.C. and the contractors.

As Wilson described it, the Commission at Washington delegates broad authority to its principal field offices, which work closely with the contractors and keep in day-to-day touch with operations. Thus the primary function of the field office in New York is to supervise the contracts for the supply of atomic feed materials to the production plants at Hanford and Oak Ridge, and also to supervise other contracts, such as the operation of the Brookhaven Laboratory on Long Island. The A.E.C. field office at Hanford concerns itself with plutonium production; the Oak Ridge office with U-235 production and certain research centers; the office at Los Alamos with weapons research; the Chicago office with the Argonne, Ames, and Berkeley Laboratories; still others with the reactor station in Idaho, and the new hydrogen-bomb center.

Each of these field offices, Wilson explained, "has become a fully integrated organization, with considerable self-sufficiency for handling the extensive business operations, and for providing technical supervision of the activities in its area."

Under the over-all guidance of the general manager, these field offices enjoy wide autonomy in their relations with the contracting corporations. They have the power to negotiate and award contracts, including authority to grant separate contracts to the sum of from two to five million dollars without reference to the central office at Washington. Once the contracts are concluded, no matter what the sum, the field offices are in charge of their supervision.[5] It is doubtful whether this degree of localized authority, which is highly conducive to the autonomy of the corporations dominating this or that branch of the industry, can be found within any private combine.

Given the basic policy of contractor operations, and the wide autonomy enjoyed by the main units of the enterprise, the private corporations can assure themselves more or less permanent tenure. For the militarization of the industry and its elaborate security provisions fortify the monopolies already in control.

Among the many ways the security factor operates in favor of monopoly, is the practice of awarding contracts without competitive bidding for the alleged purpose of safeguarding atomic secrets and assuring maximum weapons production. In the past, it was usual for the government to put out contracts for bidding, so as to maintain at least the semblance of competition among private concerns. But this custom was changed for most military contracts during World War II, and the new practice has been carried over into the A.E.C.

To be sure, the Atomic Energy Act proclaims the cabalistic formula of "strengthening free competition in private enterprise," but it also carefully provides the necessary escape clause—"subject at all times to the paramount objective of assuring the common defense and security." Naturally, the "paramount objective" must always be paramount, or as Gordon Dean, the new A.E.C. Chairman sought to justify the contract policy: "Shall we . . . strengthen free competition in private enterprise by letting a contract by bid when to let it by negotiation on a cost-plus-fixed-fee basis might save us six months—six months which might be quite vital if we are to meet our other responsibilities under the Act—namely, assuring the common defense and security."[6]

In effect, this means that the Commission and its branch offices award contracts to chosen corporations. It also means that the contractors, once on the inside, can enjoy uninterrupted tenure, since obviously to bring in new firms would spread the "secret" and endanger "national security."

The system of negotiated contracts is general throughout the A.E.C. The managers of major nuclear production centers—General Electric at Hanford, Union Carbide at Oak Ridge, and du Pont at the new hydrogen bomb undertaking—are, of course, chosen firms. But the same system applies to other branches. Thus, of the 250 contracts administered by the New York Field Office, pertaining largely to specialized apparatus and the supply of feed materials to the nuclear production centers, 151 involve "classified" work and are therefore negotiated. But about half the contracts dealing with "unclassified" work are also negotiated on the grounds that they involve equipment which may be used in conjunction with work classified as secret.[7] Accordingly, only one out of every five contracts is put out for bids, an indication of how worthless is the pious admonition of the Atomic Energy Act to encourage competition. The result has been to "freeze" the industry, that is, to safeguard the position of the entrenched corporations, even in the relatively less trustified sectors such as instrumentation and feed materials.

The system of subcontracting also serves to perpetuate the monopoly position. Little difference in this respect is made by a provision in the Atomic Energy Act for approval of subcontracts by the A.E.C. Actually, the corporations in charge of the principal production centers have become the most important contracting and procurement agencies of the atomic enterprise. By the practice of subcontracting they control all phases of the undertaking under their management, no matter how diversified the materials, processes and equipment. Thus as general manager at Hanford, General Electric controls the entire plutonium production process and related activities by letting out some fifty subcontracts for design, construction, and new processes as well as for city management, newspapers, and other civil services. The community centered around Hanford is in effect a glorified company town, with a degree of supervision which even companies in remote mining and textile communities do not enjoy. The same applies generally to other major centers of the munitions industry.

Security — For Monopoly

The select corporations in charge of the atomic enterprise, with its novel materials and processes, enjoy an exclusive monopoly of know-how. Only two corporations—General Electric and du Pont—have mass-produced plutonium; only one, Union Carbide, turns out enriched uranium; only one, du Pont again, is assured control of tritium, the vital component of the projected hydrogen bomb.

Severe security restrictions upon the dissemination of technical and scientific information about atomics guarantee this monopoly better than any patent control yet known. State ownership of the new weapons industry, with the provisions for sequestering all inventions dealing with nuclear production, excludes "outsiders" more effectively than any patent holding monopoly. The most powerful cartels could have worked out no more elaborate and tyrannical a system for safeguarding production secrets than the regime of F.B.I. surveillance over research, "loyalty tests," iron-bound strictures on publication, with a general terror prevailing throughout the industry. It is the ideal every patent cartel seeks to achieve.

Accordingly, a contract with the A.E.C. for the operation of nuclear production facilities amounts to the assignment of an exclusive domain, and the system of "military security" guarantees the supremacy of the chosen corporation.

Internationally, atomic diplomacy functions toward the same end. The Combined Policy Committee imposes severe restrictions of information upon Britain and Canada, and the F.B.I. dossier system is exported to both countries. Furthermore, the exchange of information in the broad field of atomic technology is forbidden by law.

According to the Atomic Energy Act, information concerning the "practical industrial application of atomic energy" is to be shared with other countries only after a system of international control has been established. In the absence of an international agreement on atomic disarmament this provision amounts to an embargo on scientific and technical interchange. The corporations which have already monopolized this information in the American enterprise are thus assured that no rival foreign monopoly group will gain access to their stockpile of technology.

The embargo can operate both ways, even to the disadvantage of the American monopolies as other countries develop the new technology, especially in its application to industry. Nevertheless, the export embargo, which applies to apparatus embodying any aspect of the new technique as well as to information, plays the role of a typical world cartel practice at the government level, and serves to fortify the present monopoly of nuclear production.* This circumstance also becomes a strong factor against an international control agreement, since a ban on atomic weapons would create new pressures for the industrial, peaceful application of nuclear energy.

The monopoly of technique assured by an A.E.C. contract extends over the entire range of atomics.

The most vital "secrets," which are the heart of the new technology, concern the production of nuclear materials and allied processes. Another group of "secrets" applies to the mechanism of weapons. In both these areas the A.E.C. is legally designated as the owner of patents and inventions. Irrespective of legal ownership, the actual know-how is possessed by the corporations in charge of the production facilities, to the exclusion of others. Therefore, the companies managing the A.E.C. plants in effect enjoy an exclusive monopoly of the most vital production secrets.

It can be understood, therefore, why du Pont could afford magnanimously to forfeit all patent rights in its contract with the Manhattan District for supervision of the Hanford plutonium works, and why General Electric with almost equal magnanimity agreed later to let the A.E.C. retain the right to allocate title of patents. The advantages of ground-floor occupation in terms of widely applicable technical know-how and of operating experience overshadow by far the question of legal ownership, which is largely formal in any case since no other company has access to the technology of plutonium.

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* In March 1949, the Advisory Committee for Equipment and Material Control was established to advise the A.E.C. on withholding exports of equipment that might be useful in the development of atomic energy abroad. The membership of the body is provided by the companies supplying instruments, components, machines, and various materials to the A.E.C. It includes a vice-president of Westinghouse, and the president of National Research Corp., a principal business unit of M.I.T., whose hierarchs are so prominent in the nuclear weapons business.

The advantage, furthermore, extends to a broad field outside the nuclear process. In the first place, the technology which the corporations in the A.E.C. alone have mastered can be applied in many ways to other industries. M. W. Kellogg Co., the firm of chemical engineers which helped build the vast gas diffusion plant at Oak Ridge, pointed out in a special memorandum to the Joint Committee that the know-how "is in the minds of engineers and firms participating in the project and will be inextricably bound up with their future thinking, engineering design, construction, and processing." As this company quaintly put it, the engineers "have brought to their parent companies a vastly increased lore of new techniques which cannot help but be reflected in increased service to their customers."[8]

In the outer field of application, however, the contractors were not content with their general advantage; they also obtained patent rights on inventions growing out of work in the atomic enterprises. The so-called outfield, comprising a wide range of industry where new techniques developed in the bomb industry can be applied to non-nuclear processes, is of vital importance since it involves the position of well-established monopolies in many areas. In this respect, the A.E.C. followed the pattern set by the central weapons research agency and the Manhattan District during the war, in safeguarding and strengthening the monopoly positions, in their respective fields, of the firms engaged in the atomic enterprise.

According to the first report of the Patents Advisory Panel of the A.E.C. (September 1947), three types of contracts are used. Type A, employed in about 60 percent of all contracts, provides that the Commission should allocate patents, and usually keeps all rights. In Type B., the A.E.C. retains the right to allocate, but the contractor is assured a license to use the invention outside the field of atomic energy, and he may also get the right to issue sublicenses.

This applies to 25 percent of all contracts. In the remaining cases, containing the Type C clause, the contractor gets the sole license

for the outfield and the exclusive right to sublicense, while the A.E.C. retains all atomic energy uses. Thus, in at least 40 percent of all contracts, the company is assured either a license in the outfield or, even better, an exclusive control of non-nuclear applications. The panel made no effort to evaluate the relative importance of the different types of contracts in terms of size or value of techniques. But since the Type A clause is used mostly in basic research contracts, which represent only a minor portion of the A.E.C. expenditures, by far the larger part of the atomic enterprise may be covered by contracts allocating outfield rights to the participating monopolies.[9]

In the General Electric contract, the A.E.C. has the right to allocate title of patents. In practice, this means that the A.E.C. decides whether the invention is important to nuclear production (in which case the Commission keeps title) or falls into the outfield, in which case G.E. obtains title. In the first case, however, G.E. is the only company having the know-how, and there is no danger of any other firm acquiring it, so that for the present legal ownership is immaterial. On the other hand, only G.E. gets the right to the outfield, where it can exploit patent rights as it pleases. Similarly in other fields. United States Vanadium Corp. acknowledges that, in the development of more efficient methods for separating uranium ores from carnotite, new separating methods were perfected applicable to the vanadium industry as a whole, where this corporation is one of the two firms maintaining a monopoly. Some 200 patents were taken out by employees of Stone & Webster, the major engineering firm in the Manhattan District, as a result of their work on the wartime atomic project.[10] The contractors, accordingly, command the new technology developed in the government-owned industry, whether in the infield or the outfield.

The companies in charge of operations, it appears, constitute a rather exclusive aristocracy in the sphere of atomic techniques, including general scientific information. The basic technical and scientific data are securely locked in the vaults of the A.E.C., to which only authorized persons have access. By the end of 1949, the A.E.C. library index had grown to 200,000 cards, covering about 38,000 reports. Of these, less than 10 percent had been published or were scheduled for publication in the near future.[11] And of the scientific and technical papers made available to the public, only five percent (as of January 1, 1949) are in the field of industrial technology.[12] This is indeed a formidable and close-fisted monopoly of both fundamental scientific knowledge and new industrial techniques.

Many unassigned patents applicable to outside industry are also only 67 were made available and by June 1950 unclassified patents holding company in the world. It was not until December 1949 that the A.E.C. began releasing some patents for general use. At first only 67 were made available and by June 1950 unclassified patents reached the grand total of 168.[13] How small this number is compared with the patents locked away is indicated by the memorandum of the Kellogg Co. already referred to. According to this, in the Manhattan District alone more than 5,000 new products and processes were developed with potential use in many phases of industry outside atomic energy, such as petroleum refining, metallurgy, ceramics, chemical and gas processing, frozen and dehydrated foods, electronic instruments, refrigeration, and continuous automatic controls applicable to many industrial branches.

Naturally, the outsiders sought access to this stockpile of know-how in the hands of the A.E.C. and its leading contractors.*

With cries of secrecy and still more secrecy rising in new crescendo, there is little prospect that substantial technological data, even in the peripheral zone, will be pried loose from the atomic patents combine.

As a result of their monopoly of atomic technology, the contracting corporations hold a favored position on a broad industrial front. This arises from command not only of valuable techniques applicable to non-nuclear processes but also of a potential source of power for industry and transportation. Obviously, the latter is not in immediate prospect, owing to the total militarization of the industry. But the potential cannot be ignored by the monopolies, since atomic energy may rival conventional fuels and power techniques and therefore threatens to disturb the existing network of financial control in these branches. In general, the economy is so highly integrated and trustified that a major technical innovation may well influence the interplay of forces within the corporate structure as a whole to the disadvantage of this or that monopoly group. Accordingly, control of the atomic technology

* In August 1949, under considerable pressure, the A.E.C. appointed the Temporary Advisory Committee on Technical Information to Industry to initiate a "trial program" for the release of selected technical information of value to industry. Sidney Kirkpatrick, vice-president of McGraw-Hill Book Co., the leading publisher of business and technical literature, was appointed chairman and the members were drawn from the economic and engineering publications

becomes a matter of the highest strategic significance in the inter-monopoly struggle, reaching into areas outside the production of weapons.

Atomic Unionism

Hand in hand with complete cartel security, an A.E.C. contractor is also assured the whip hand over labor and the trade unions. The system of military security reimposes blacklists, counter-union espionage, injunctions against strikes, and other weapons in the anti-labor arsenal of the employers, which the workers have almost eliminated as a result of long and bitter struggles. The weak and insecure position of the unions in the new munitions industry affects the strength of organized labor as a whole.

To begin with, the clearance provisions of the A.E.C., applying to all personnel in atomic installations, present the corporations with a golden opportunity to weed out active trade unionists and, in general, employees not to their liking. Under the Atomic Energy Act, the Federal Bureau of Investigation must investigate the character, associations, and loyalty of each individual, and report the findings to the A.E.C. On the basis of this investigation, the A.E.C. officials determine the eligibility of the worker. The scope of the findings is broad enough to exclude anyone who has at any time participated in militant labor actions or holds views not in strictest conformity with the conception of loyalty common to police informers and jingo militarists.

According to the official criteria used by the A.E.C. officials in clearing workers for employment,[14] a "presumption of security risk" or a "reasonable belief" of risk, arises when the individual or his spouse was at any time directly or remotely connected with: acts of sabotage, espionage, treason or sedition in the very broad interpretation now common; espionage suspects or even ordinary representatives of foreign nations "whose interests may be inimical to the interests of the United States," or relatives living in such countries; interest in organizations declared subversive or "fronts" by the attorney general, or even organizations "infiltrated" by members of such groups, or even relatives and friends who may be associated with such organizations. An individual can also be excluded if he has a "sympathetic interest in subversive political ideologies," if his personal views are "sympathetic to or coincide with subversive 'lines,'" or if, in the police-informer's lexicon, he has "publicly or privately advocated revolution by force or violence," or if he is simply a non-religious conscientious objector to military service. These and other similar grounds for "reasonable belief" or "presumption," which are practically limitless in a political atmosphere of reaction and warmongering, turn the atomic enterprise into an anti-labor fortress.

These same criteria are used to rule out entire unions, and to render the right of collective bargaining a farce. Thus, in September 1948 on "security" grounds, Chairman Lilienthal of the A.E.C. ordered General Electric not to recognize the United Electrical, Radio & Machine Workers of America (at that time affiliated with the C.I.O.) at the Knolls Atomic Power Laboratory (an order later extended to all atomic operations at Schenectady). He also ordered the University of Chicago to refrain from recognizing the United Public Workers of America at the Argonne National Laboratory. This despite the fact that the latter was the only union organizing the workers at Argonne and that the U.E. was the certified bargaining agent for G.E.'s plant at Schenectady, from which long-time members of the union had been transferred to the Knolls project. The A.E.C. required that the officers of the union pass the same "security" tests as employees in the atomic industry before they could be recognized in collective bargaining.[15] Security clearance is also required of others who may be involved in negotiations or arbitration, like lawyers representing the unions and trial examiners of the National Labor Relations Board. The choice of local union representatives is practically in the hands of the A.E.C., for they too must be cleared.

In the face of this extraordinary power to exclude individual employees, and to deprive workers of their right to have unions of their own choosing, the elaborate structure of arbitration panels and review boards is a mockery of union rights, having the sole purpose of subordinating the trade unions entirely to the atomic weapons program.

In a formulation of labor policy, the A.E.C. demanded from labor "whole-hearted acceptance of the moral responsibility" for nuclear weapons production, assurances of "loyalty" from workers and union officials alike, and "continuity of production." To these demands the A.E.C. appended the pious hope of "minimum interference with the traditional rights and privileges of American labor," while assuring the contractors of the "least possible government interference" with their "efficient management."[16]

These general principles were elaborated into a set of governing rules by a commission appointed by President Truman in September 1948 to make recommendations on the "peaceful and orderly settlement of labor disputes in Government-owned, privately operated atomic energy installations." In April 1949, this body came out with a program which goes far beyond the Labor Management Relations Act of 1947 (the Taft-Hartley "slave" labor act) in reversing the long-established principles of collective bargaining.[17]

The first and cardinal rule of the special commission requires that labor "forego all resort to strikes" or "other interruptions" of work. It then excludes as matters of collective bargaining between management and labor all questions of security, a field designated as the "absolute and final authority" of the A.E.C., although, as we have seen, these matters involve the employment of workers and their choice of union representatives. Having thus hamstrung the unions at the most vital points, the commission magnanimously conceded that "the normal and typical aspects of wages, hours, and working conditions" shall be left to the contracting corporations and labor—but up to a certain point.

These negotiations are subject, in the first place, to the responsibility of the A.E.C. for security and weapons output, which means that any interruption of production "cannot be tolerated," and that the process of collective bargaining cannot proceed in the "normal" manner. Accordingly, labor grievances must be handled within the strict confines of mediation, arbitration, and labor-management collaboration at all levels, with the workers surrendering at every stage their most effective weapon—the right to strike.

To cap this glorified system of company-unionism, an A.E.C. Labor Relations Panel, appointed by the President, is to take jurisdiction when all other measures of conciliation have failed, including resort to the National Labor Relations Board and other government arbitration services. While the panel has the case under consideration, and also during the entire preceding and possibly endless chain of arbitrations and mediations, the union is obligated not to strike and the existing conditions of work which gave rise to the workers' grievances are to continue without change. Finally, if the panel is unable to force a "voluntary" agreement, it may order a settlement on its own terms, giving the workers thirty days in which to accept. After that, of course, there is always the resort to a presidential decree and military action against the workers.

This system of compulsory arbitration, drawing in every existing government agency for mediation of labor disputes and adding still another supreme arbiter, is the most comprehensive yet devised by the collective brains of corporation labor-management experts.

To emphasize the total subservience of labor, not a single representative of the unions is to be found on the panels and advisory bodies of the A.E.C., even those directly affecting the position of labor. The Labor Relations Panel, appointed by the President to carry out the policy of his special commission, are supposedly "impartial" professional arbitrators, the product of the long-enduring effort by the employers to perfect an iron-clad, no-strike and compulsory conciliation system. Not a single labor member is on the Advisory Committee on Personnel Management, which includes the president and the honorary president of the American Management Association, the peak body in this field of the big corporations, as well as a vice-president of the monopolistic General Foods Corp.

Labor received an equally "fair deal" on the Security Survey Panel established to study and suggest improvements in the Security Division of the A.E.C. The relation of security to labor conditions and rights was tacitly recognized by the appointment as head of the Survey Panel of John S. Bugas, formerly a Secret Service agent in charge of the Detroit office, and at the time vice-president in charge of labor relations of Ford Motor Co.

Should an employee object to the loyalty findings by A.E.C. officials, he has recourse to the Personnel Security Review Board, which is allegedly impartial. Here his fate will be determined by a corporation lawyer, a director of United Corp. (a large utility-holding company) and Arthur S. Fleming, the former U.S. Civil Service Commissioner who will be remembered as an early pioneer of "red" purges. Or should the worker, scientist, or technician employed in the dangerous processes of the atomic industry expect special consideration for his safety and health, he will find little cause for confidence in the Safety and Industrial Health Advisory Board, which includes among its members the safety directors of Merck & Co., General Electric, and Consolidated Edison Co. of New York.

In sum, the workers in the government-owned and corporation-operated nuclear weapons industry are deprived of basic union rights. Like other aspects of the nuclear state-monopoly combine, the labor system approximates the full-fledged corporate order of a fascist state.

Despite elaborate strike-proof precautions, numerous strikes have occurred among both construction workers and the operating force. Strikes and the threats of strike arose from the great gap between wages and the steep rise in the cost of living resulting from the war economy, pressures to increase the work week, job grading and differentials, high cost of insurance and hospital benefits in an industry where these are especially pertinent, lack of compensation for travel over long distances to and from work, and other issues peculiar to the industry. Many of the workers' demands reflect the great pressure upon them to speed up the munitions program, and also the hard conditions of living in the company towns of the major atomic centers.

During the two years since its inception, the A.E.C. Labor Relations Panel, which takes jurisdiction only after all other efforts at negotiation and government conciliation have failed, dealt with 25 disputes involving strikes or the threat of strike. It issued at least nine obligatory recommendations, the most important of which ordered the workers at the huge Hanford plutonium center to accept a General Electric wage offer that fell far short of their demand. In fact, the Panel had to express "concern" lest its numerous orders leave the impression that it was canceling out the right of collective bargaining![18]

As part of the same anti-labor pattern, discrimination against Negro workers runs rampant in the atomic industry. Although the A.E.C. complains that shortages in the skilled occupations hamper operations,[19] it has made no effort to overcome prevailing restrictions upon the employment of skilled Negro labor. Instead, the A.E.C. has adopted the same discriminatory practices which obtain throughout industry. The issue came sharply forward in connection with the construction of the hydrogen-bomb center near Savannah, South Carolina, which is managed by the du Pont chemical trust.

The Savannah works are in an area of large Negro population. Thousands of farm families, many of them Negro, are to be displaced from a vast area in Barnwell and Aiken counties. According to the A.E.C., a preliminary survey of this site showed 15,000 workers available within 40 miles, and 5,000 within 20 miles.[20] This was no doubt an important factor in the selection of the Savannah River location, since 40,000 workers are to be employed at the peak of construction.

Yet, as the new munitions center was begun, investigation on the spot by the National Urban League and the National Association for the Advancement of Colored People revealed rigid bias against Negro workers, on the part of both du Pont and the A.E.C. In a letter to the *New York Times,* Lester Granger, secretary of the National Urban League, cited an official statement of the du Pont trust to the effect that employment policies will be determined "with due consideration to prevailing racial customs and practices." The A.E.C.'s representative on the project declared: "When we hired the du Pont Company we hired their employment policies."

Granger charged the A.E.C. with itself having set the pattern of following local discrimination and segregation practices. Documentary evidence, compiled over months of investigation, was cited to prove that Negro workers applying for jobs had been placed in the more temporary, poorly-paid categories or had been turned aside without examination of their job qualifications. Only as laborers on construction were the Negroes being employed and on a segregated basis, while no Negro could be seen on a white collar job. Of the 3,000 Negro workers on the project, less than 100 were placed at skilled occupations. The segregation and undergrading policies of the local craft unions aided and abetted the official policy of management.[21]

Thus, the contractors of the A.E.C. are granted domination of an entirely new technology with immense implications, complete cartel security against rivals, and unprecedented control of labor in the industry.

5. The "New Partnership"

PROFITS ARE OBSCURED by the same aura of mystery which surrounds the entire atomic industry. The technique of private gain is a secret as carefully guarded as the mechanism of atomic explosion. In fact, the rate of profit is hardly ever mentioned, while the rate of bomb production is the subject of constant public conjecture.

If we are to take the major A.E.C. contracts at their face value, du Pont received a profit of one dollar as the first operator of the Hanford plutonium works, General Electric comes out even at Hanford after the overhead allowance is paid, Union Carbide collects a "reasonable" fee for management of Oak Ridge, and the new hydrogen-bomb undertaking will prove no more profitable to du Pont than the wartime contract. The pretense implicit in these contracts is that the corporations are in atomics from a profound sense of patriotic duty and not for private profit, a pretense so thin that few corporate moguls dare claim such altruism.

Chain of Profits

True, profits are not realized in the normal way of a privately-owned enterprise. State ownership and military production alter the form of realization. Profits are pocketed by the private corporations in a roundabout way, and they also accrue over a longer period. They may not even appear in the current, taxable accounts of the companies, or they may figure only indirectly and at a tiny fraction of their real value. But in the real bookkeeping of atomics, as distinguished from ledger-economics, profit is on a scale unprecedented in privately-owned industry.

The first major, and under the circumstances incalculable, gain of the corporations dominating the nuclear weapons business is their mastery of the entire technology without the necessity of committing a single penny of their own capital for development and operation. That much is admitted by banker Strauss, the atomic Commissioner. When asked by an interviewer for a business journal whether the corporations were in the enterprise for profit, he answered emphatically and without hesitation: "Yes, for profit." In some cases, he claimed, the actual profit was small, "a carry-over from the wartime situation in which much work was done for the government by industry for nominal profit." Even in this narrow interpretation of gain, he felt, the "nominal" profits realized on current operations were more than enough, considering that the contractor takes no risk, since he is guaranteed by the government against loss. And this, he pointed out, is the important thing in a new enterprise involving processes "without previous experience."[1]

In the course of ordinary business, when a corporation undertakes a significant new development, it expects to invest large sums without immediate return, for the sake of profits to be realized later. But in the massive atomic technology, the state took over this function, investing up to the end of 1950 nearly $5 billion—more than half since the end of World War II—in research, experimentation, construction and operation. Without the slightest risk and without paying a cent of interest, the contracting corporations came in to realize whatever immediate profits were available and to place themselves in a position to exploit the long-range advantages. Major contracts being of the cost-plus type, the companies were reimbursed immediately for their own outlays very generously calculated, and they were granted without charge comprehensive insurance against any loss over the entire range of their business which might result from participation in the bomb project.

They pay nothing for the scientific and technical information thus gathered, for the services of many specialists in numerous fields, for the use of lavishly equipped laboratories, and for operational experience. Nor are the private corporations charged for numerous other government services on their behalf, such as the work of co-ordination done by the A.E.C. apparatus, the maintenance of the patent monopoly, the management of labor, or the use of state authority to corner raw materials. The ordinary risks of the market are absent, since the government is the assured purchaser of services and equipment, and the sole repository of the end product.

In acquiring these long-range and strategic advantages, the contracting corporations at the same time turn a pretty profit from current operations. The profits immediately pocketed by the corporations are not as nominal as they are made to appear. Reimbursed costs, overhead allowances, and management fees provide juicy current gains.

Management fees above costs are direct, undisguised profits. The A.E.C. contracts with Union Carbide for management of Oak Ridge and other operations are of this type. In 1949, the combine collected over $2 million in fees alone for management of Oak Ridge and other services. Additional profits are hidden in the supply of materials and services which are charged as costs. In that year, the government paid the trust $50 million as reimbursement for expenditures and overhead in the operation of Oak Ridge alone. More millions were paid the various subsidiaries of Union Carbide for domestic uranium ore and for the supply of feed materials to the New York Field Office, the latter item alone amounting to $1.5 million. In addition, the trust realized a high profit from its exclusive contract for the production of flurothene, a new plastic used in the diffusion process, and from contracts in other phases of the industry.[2] These are handsome immediate profits, aside from the prospects of even greater returns from Carbide's monopolization of enriched uranium, giving it command of one entire phase of the industry.

The contract under which General Electric enjoys its monopoly of plutonium is based on costs, plus an annual overhead allowance. In theory, the trust is supposed to charge the A.E.C. only for the actual costs of operations. In addition, G.E. is given an allowance of $200,000 annually as an administrative fund against which home office overhead and costs not accounted for elsewhere are charged. In 1949 alone, the trust was reimbursed with $120 million for costs at Hanford, and was paid another $2.4 million for various home office charges with additional sums for factory and construction overhead.[3] Included in these costs is payment for goods supplied from G.E. plants, which sell to Hanford about half the standard electrical equipment used there, and practically all the specialized electronic apparatus. At the high rate of profit for these bulk and non-competitive sales, which are in effect merely a transfer of goods from one department of G.E. to another, the A.E.C. has become a top customer of the corporation. Besides, liberal overhead allowances help pay the huge salaries of G.E. executives, some running over a hundred thousand dollars annually.

However, G.E. profits must be calculated on a much more comprehensive scale. What value is to be placed, for example, on the technological know-how, the unique process, the inventions, and the experience gathered in the enterprise by G.E., over which it has exclusive control? Or what cost, under other circumstances deductible from income, is to be assigned the elaborate system of "security" regulations safeguarding G.E.'s control of the new techniques? Or what charges, which otherwise would have to be added to items in the ledger under "labor relations," are saved by the tyranny of terror ruling over the scientists, technicians, and workers engaged in the atomic enterprise?

G.E.'s or du Pont's cost-type contracts with the A.E.C. recall the dollar-a-year men who flooded the government during the war. These "patriots" served their home corporations well for it was their function to safeguard in the stress of war the corporate control of the economy and gain the strategic advantages arising from new lines of production and novel techniques. The following exchange between Senator McMahon, chairman of the Joint Congressional Committee, and vice president H. A. Winne of G.E., on the profitable aspects of the contract indicates, however faintly, the real advantages involved:

"*The Chairman*: Dr. Winne, of course the G.E. naturally will secure a great advantage over anybody else in the electrical manufacturing industry if and when this power becomes useful for peacetime pursuits. . . .

"*Mr. Winne*: As I see it, our main reason for going into this project at all is that here is a development of atomic energy which has at least the possibility of being a factor in making electric power more readily available, available over greater areas and possibly at lower costs, for the future than it is now.

"Any development of that nature is of interest to the G.E. Co., because we are an electrical-manufacturing company; and the more readily electric power is available to everybody, the more chance we have to sell our products."[4]

Neither the Senator nor the G.E. executive is as innocent as he may appear in this exchange, for as we shall soon see G.E. is more interested in the immediate military applications of atomic energy than in its future use as a source of power. But these extracts do indicate the central approach of G.E. in seizing control of a new technology with vast immediate and potential repercussions upon the economy.

Of course, control of plutonium has advantages which neither Winne nor McMahon found it expedient to mention. With this vital branch of the atom bomb business firmly in the grip of G.E., while allied corporations of the same monopoly circle extend their hold upon raw materials and other vital phases of the new industry, the Morgan banking group is in a position to exert effective control of the entire enterprise, in war and peace. It is not merely another technique, but a new sphere of industry that impinges upon vital phases of the domestic and world economy, and greatly enhances the power of the Morgan monopoly group politically as well as economically. This is the biggest prize of the postwar era, and the Morgan bankers are hardly likely to count its worth only in terms of the sizable dollar bookkeeping profits realized currently from the contract.

Signing a contract with the A.E.C., therefore, sets off a chain reaction affecting the power relations in both business and politics. The splitting of the first profit dividend from the operation sets in motion an entire chain of profit-taking which extends far ahead, and branches out into many lucrative avenues. The "dollar-a-year" corporations of the nuclear weapons business not only manage to collect profits in the ordinary, business manner, but they also realize immense gains and advantages of long-range strategic significance, as a result of their joint undertaking with the state.

Holding Company for the Trusts

It remained for Lilienthal to find a "theory" to fit the state-monopoly relationship in the atomic industry. Referring to the corporations running the enterprise, he told the Joint Congressional Committee in an outburst of enthusiasm:

"'Contractors' is not the word; they are partners, they are operators. What we are trying to do . . . is to develop a new kind of set-up in American industrial affairs which is a hybrid of public and private."

A few years ago, this "theory" would have raised a storm of protest from liberal circles, for everyone would have recognized it for what it is, a desperate attempt to rationalize the complete subservience of the A.E.C. to the corporations. But in the prevailing political atmosphere, in which the "red danger" can be used to justify any crime, Lilienthal's discovery passed without a ripple of comment.

In the same outburst of theory, the A.E.C. chairman explained that as a matter of policy the Commission is opposed "to any detailed supervision of the General Electric Company's work" (then under criticism for its operation of Hanford), or, it may be added, of any corporation holding the exalted position of partner with the government in the atomic enterprise.[5] The new business theorist did not seem to realize that he was acknowledging the senior role of G.E. and other contracting corporations in this jubilant "partnership," nor did he appear aware of his negation of the central pretense of government ownership, namely, the supposed function of the A.E.C. as trustee of the people against the greed of private interests.

When it comes to the realities of power, the corporate moguls do not have much patience with hazy definitions, nor are they much concerned with the rationalizations of had-been or would-be liberals. According to a recent interview, Charles E. Wilson, president of General Electric and for long a power at the White House and the Pentagon, sees the general role of his company as follows:

> "We are no longer just a manufacturer and seller of electrical equipment. We are a factor in science, in education, in government, and in social progress. We have it within our power to influence the course and character of all private enterprise."[6]

One may well question the claim to social progress, but as a statement of broad power this is not mere boasting. It throws more light on the A.E.C. and all its works than does the theory of partnership.

The latter may serve as justification for handing over atomics to the corporations and it may also illuminate Lilienthal's own role as a "public servant." By indirection, the concept also reveals the senior role of the trusts in the alleged partnership, but as a theory it is of little value in explaining the real state of affairs.

A working partnership is still to be invented in which one member makes all capital investment, supplies the funds for current operations, bears all risks, and covers the partner for all losses, while the latter without investing a single penny runs the entire enterprise, appropriates all current profits, accumulates for his own use a multitude of new techniques, and, into the bargain, reserves for himself the exclusive domination of the undertaking for the present and the future. This hardly suggests a status more or less of equality among participants, which is the earmark of a business partnership.

Nor do the participants enter the contract from independent positions, another characteristic of partnership. We have already seen

how the monopolies directly influence and dominate the high policy bodies and the entire apparatus of control. The A.E.C. as the government agency has no independent role, but is only a central administrative and clearing body for the corporations which control the enterprise. To be sure, the A.E.C. has certain administrative prerogatives which are essential for the co-ordination of the undertaking and for the rendering of various state services. It is not a passive participant in the combination, since it must make positive contributions to the contracting corporations. Likewise, the role of the government as a whole is not merely that of a passive servant. It supplies capital raised from the people, and the authority of the state without which the new industry could not be so rapidly cartelized, or raw materials so completely monopolized. Congress provides the necessary constitutional dressing and the illusion that through it the people have the right to question and investigate. But all this takes place not from an independent base providing a real counter-force to private monopoly, but from positions which are already under the wing of monopoly.

The result is not a "hybrid of public and private" enterprise leading to "a new kind of set-up in American industrial affairs," according to Lilienthal's fantasy, but the most thorough-going fusion of the state into the corporate structure. This is expressed technically but precisely in the A.E.C. accounting system, established after a survey by five leading firms:

> "The major cost type contracts should be considered as though they were—to use a business concept—affiliated corporations as far as their contracts with the Commission were concerned. Costs would thus be considered as incurred by the government at the moment the contractors incurred them, and the movement of cash between the government and its contractors should have no more cost-accounting significance than the transfer of funds from one bank account to another."[7]

This definition comes much closer to the real relationship, since it allows for the close interweaving of the corporations and the state agency, so that the borderline between the two practically disappears. The accounting system also approaches reality in treating the contracting corporations as business affiliates of the A.E.C., if the latter is considered a central holding company for the trusts.

In reality, the A.E.C. fulfills the role of a supreme holding company with many functions. As the agency of the government, the A.E.C. holds in trust for the private corporations the legal title to the nuclear weapons industry. It is a sort of central bank through which capital is channeled into the various branches of the industry, and current operating accounts for the entire undertaking are kept. In addition, at the center and through its divisions and field offices, the A.E.C. is the principal medium for cartelization of the industry, that is, for bringing numerous operations and entire branches under the domination of the big trusts. The agency is also the cartel repository and assignment center for patents, and keeper for the participating corporations of the scientific and technical stockpile. Moreover, the Commission acts as the Washington lobby of the atomic contractors, pleading their case when necessary before Congressional committees and other government bodies. Finally, the A.E.C. fulfills the role of the peak labor relations trade association of the atomic industry, bringing to bear against the workers the full force of the state authority.

The closest parallel between this structure and the forms of combination used by monopoly is the cartel, with its independent participating trusts which allocate among themselves, production, patents, and markets in accordance with relative strength. In the most highly developed form, there is an organized cartel center in which participation by member trusts is carefully apportioned in relation to their strength at the time. But within the cartel, the inter-monopoly struggle proceeds, each member seeking advantages over the other until the relations prevailing when the cartel was organized may be altered.

The nuclear weapons industry may be said to represent the cartel at its zenith, where the state appears as the cartel center, functioning on behalf of the monopolies dominant in the industry. Within this cartel, organized through the apparatus of the state, the major production sectors of the industry are parceled out among a few peak monopolies, and the rest of the enterprise is co-ordinated around these centers. But nothing remains static. The inter-monopoly strife continues within this framework, affected also by the relations in the corporate structure as a whole, and it is reflected in the outer shell of the controlling apparatus, in the top Commission and committees.

Politics, military strategy, world diplomacy are component elements in the combination. The broad strategy of corporate expansion on a world scale, inflaming the martial spirit, guides the super-weapons cartel. Here the amalgam of state and monopoly has attained the pinnacle. The nuclear weapons state-monopoly cartel is the furthest organic advance of the fascist tendency, the closest approach in the United States to the corporate state of fascism.

6. Morgan and du Pont

THE KINGPINS OF the atomic enterprise are the corporations in charge of the principal production centers. Within five years after World War II, the Morgan monopoly group had taken over plutonium production and a key weapons center, seized control of atomic power development, and spread out into atomic ship propulsion as well as other vital phases of the industry. The closely-allied du Pont trust returned to take charge of the new hydrogen bomb center.

Plutonium, Inc.

In September 1946, Morgan-controlled General Electric took over from du Pont the operation of the Hanford works and of the associated community of Richland, Washington. The project comprises an area of 400,000 acres, equal to more than half the area of Rhode Island. The facilities and construction on this site were established during the war at a cost of $350 million, and included three plutonium reactors, chemical separation plants, and other supporting facilities.

E. I. du Pont de Nemours & Co. had been in charge of plutonium from the beginning. From the end of 1942 to 1946, when du Pont withdrew from Hanford, it shared with the Metallurgical Laboratory of the University of Chicago, the responsibility for this new atomic explosive. Du Pont designed and constructed the pilot plant at Oak Ridge, Tennessee, and built and operated the plutonium machines at Hanford. Du Pont scientists and engineers manned the government staffs, and the trust "lent" its technicians and scientists to the Metallurgical Laboratory, where research on plutonium was centered. As revealed in Dr. Henry D. Smyth's official report, all significant research data on plutonium were reported to the corporation, the laboratories being instructed to furnish du Pont with whatever information was requested.[7]

When du Pont withdrew from Hanford, its president declared that the company considered the field of nuclear physics outside its own proper realm as a chemical concern. This could hardly be taken seriously, since the du Ponts have branched out into fields other than chemicals, such as auto production, and development of new metals like titanium. Moreover, chemical processes are an integral and vital part of atomics. In fact, the chemical processing plants, which separate plutonium from the irradiated uranium of the pile, represent a large part of the total investment at Hanford. And the atom bomb itself is certainly a deadly explosive—for long a du Pont specialty.

Furthermore, the withdrawal of du Pont from Hanford could hardly be considered a surrender of its interest in atomics, as subsequent events have shown. From its work in the Manhattan District, du Pont acquired a store of invaluable knowledge of all vital phases of the new industry. Even before its return to make the hydrogen bomb, the trust had continued to participate in certain other phases of development for the A.E.C., aside from whatever work it may have undertaken in its own laboratories.

It is more likely that the withdrawal of du Pont from Hanford expressed a certain forced retreat and a division of interest between the chemical trust and General Electric. These monopolies are not strangers to each other. The du Ponts and the Morgan group, to which General Electric belongs, jointly control General Motors where du Pont is dominant; and together with the Imperial Chemicals group of Britain, they hold the controlling position in International Nickel. The Morgan bankers are the chief underwriters for the du Pont interests. Through M.I.T., of which the du Ponts are the chief endowers, they dominate a key sector of the scientific hierarchy, which includes men like Compton and Bush.

A contributing factor leading to the withdrawal of du Pont was the deterioration of facilities at Hanford, which had then become a very serious matter. When the A.E.C. took charge, it was found that production was coming to a standstill and that drastic measures would have to be taken to assure the output of atomic explosives.[2] One may conjecture from this that du Pont found it expedient to withdraw from the project at that time, allowing others to undertake reconstruction.

Du Pont's retreat from Hanford also coincided with the defeat in Congress of the May-Johnson bill for continued military management of the atomic enterprise. The du Pont chemicals-munitions trust being closely identified with the military command of the Manhattan

District, the defeat of this bill was also a setback for the du Pont monopoly group. In any case, the rejection of the military control measure helped clear the way for the entry of General Electric into the leading position formerly held by du Pont.

Until then, G.E.'s participation in the atom bomb business had been limited. Under the Manhattan District, G.E.'s major participation was in the development, along with other companies, of the electromagnetic plant at Oak Ridge, where the uranium isotopes were separated by a process which was later largely discarded.* Nor was the electrical equipment trust more successful elsewhere, although it did supply specialized apparatus for the gaseous diffusion plant at Oak Ridge and the Radiation Laboratory at Berkeley, in addition to standard electrical equipment for Hanford. However, in not a single phase of the project was G.E. supreme. Other Morgan companies fared no better. Bell Telephone Laboratories participated in the gaseous diffusion research, but they did not advance much beyond that.

However, the persistent work of the Morgan interests in the initial policy committees and the peak bodies soon began to bear fruit. With the departure of du Pont and Groves, General Electric became king of plutonium.

The billion-dollar corporation immediately set up a Nucleonics Committee, consisting of four of its vice-presidents, to take charge of the new domain. The committee was headed by H. A. Winne, vice-president of General Electric in charge of engineering and a member of the committee which wrote the Baruch Plan. According to Winne, the Nucleonics Committee acted as "more or less of a board of directors" for G.E. operations within the government-owned atomic enterprise. In the latter half of 1947, a separate department was set up within G.E., as one of its nine operating divisions. The Nucleonics Department was made responsible for operations at Hanford, which by now had assumed gigantic proportions. General Electric was in the atomic industry to stay. Hanford became a G.E. subsidiary in all but name.†

A vast construction program was begun, of course, at government expense. From July 1, 1947, to April 30, 1949, 65 major construction projects were undertaken at Hanford at a cost of $240 million.[3] In 1950, at least another $150 million was to be expended upon additional facilities. Thus, new construction, begun since 1947, exceeds the original cost of the plutonium center during the war. General Electric manages the entire operation, letting out subcontracts for most of the design and construction, except for the very specialized equipment, such as remotely operated mechanisms, which it handles itself. It also supplies about half the standard electrical equipment used in the project.[4]

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* This plant was managed by the Tennessee Eastman Co., a subsidiary of Eastman Kodak. Other participants included Westinghouse, Allis-Chalmers, and Stone & Webster Engineering Corp. (of the New England monopoly group).

† In September 1951 the A.E.C. contract with G.E. was extended another six years, until June 30, 1956.

The new facilities include at least two additional plutonium piles, chemical separation plants, laboratories, and housing. The expansion at Hanford has not only increased the importance of the plutonium center with respect to the atomic industry as a whole, but it has also brought additional processes under G.E. control. Thus, one of the new units beginning operation in 1949 was the plutonium fabrication plant, which processes the plutonium as it comes from the reactors for use in bombs. This work had previously been done in other A.E.C. installations. George R. Prout, the G.E. vice-president in charge at Hanford, explained that the object was to get the fabricating process "out of what was fundamentally a laboratory activity and get it into a manufacturing plant," so that the vital bomb component would no longer be a "handmade unit."[5] Now the processing is completed at Hanford, bringing the entire plutonium cycle under G.E. control.

Under its contract with the A.E.C., General Electric operates the plants at Hanford, supervises the construction of new facilities, and also manages the city of Richland where the Hanford employees and their families, numbering some 23,000 people, are housed. G.E. has some fifty subcontractors, acts as the central procurement agency for the entire plutonium operation, and in addition looks after the cultural, educational, police, and other community services. Hanford and Richland together constitute a completely integrated company town.

Atomic Power — for War

Under the same contract which gave it Hanford, General Electric also took over the construction and operation of the Knolls Atomic Power Laboratory. This laboratory was established in November 1946, adjacent to and really part of G.E.'s general research facilities at

Schenectady, New York. In September 1948, an additional site covering 4500 acres near West Milton in Saratoga County, New York, was obtained to accommodate the new atomic reactor which was to be built by General Electric.

The announced purpose of this new project was to carry on research and experimentation on all phases of atomic power development. The intermediate power breeder reactor, as the G.E. project was known, was often cited by the A.E.C. chiefs as evidence that their munitions enterprise was also interested in the constructive use of atomic energy. Many learned lectures were given by A.E.C. administrators explaining the principles by which it was expected that the new reactor would produce power from plutonium while at the same time providing more plutonium. The new element would be "burned" at very high temperatures, thus producing heat for power and at the same time "breeding" more nuclear fuel, which could be used in secondary power machines. This was considered the key to the most efficient method, according to present perspectives, for the production of useful power in large quantities on a basis competitive with the customary fuels.

Accordingly, G.E. control of Knolls complements its domination of Hanford, where plutonium is produced. It is in command not only of the essential fissionable component of a prospective power reactor, but of the main technology leading toward the eventual commercial use of atomic energy, if and when this is undertaken.

Having moved into the ground floor of atomic power development by the coup which gave it both plutonium and the projected power reactor, G.E. did not intend to permit others to enter. By terms of the contract with A.E.C., the electrical equipment trust is obliged to permit other companies in the same field to participate at Knolls *only to the extent of 15 percent of the technical staff at the laboratory.* During 1949, only five employees of Westinghouse, the chief rival of G.E., were permitted at Knolls on full time.[6] With G.E. in control, even the few "outsiders" who may find their way into Knolls are hardly likely to enjoy free access to the research information developed there.

G.E. was thus fully prepared to take advantage of whatever opportunities might present themselves in the field of atomics. The construction of the experimental power station at West Milton was to begin in 1950.

True, atomic power development could be only a minor component in the atom bomb business. Nevertheless, a corporation boasting of its "business statesmanship" and looking out for its future interests could not afford to ignore the vast potential of atomic power, since a rival might attempt to seize control of it. Too great is the implicit threat to existing electric power empires, to the established fuels like coal and oil, to the standard power equipment business, and to the network of corporate controls over these spheres. Clearly, it was the business of the G.E. magnates to fortify this strategic position, so that they could determine to what extent and at what rate atomic power was to be developed once this could no longer be avoided, with least harm to the existing investments of their parent monopoly group and with greater profits for their own firm.

Once having seized this position, G.E. showed no haste to enter the age of industrial atomic power. According to *Business Week*, only slow progress was made on the design of the power reactor. When the time approached to build the experimental machine, no exact specifications or cost estimates were ready. If G.E. apparently had no intention of rushing into this new field of power technology, it did take the precaution of gathering into its own fold the cream of nuclear engineers. No less an authority than Laurence Hafstad, director of the A.E.C. Reactor Division, pointed out that the electrical trust had gathered at Knolls a substantial part of all the engineers and physicists in the country able to supervise reactor projects.[7]

In command of the approaches to atomic power for industrial use the G.E. trust turned to the more profitable venture of developing power for specific war purposes. On April 14, 1950, the A.E.C. announced that on the recommendation of G.E., the program at Knolls had been extensively revised. The intermediate power reactor, upon which had rested the main pretenses of peaceful atomics, was *postponed indefinitely*. Instead, a part of G.E.'s technical staff at Knolls was to be shifted to Hanford to help boost production of nuclear weapon components or, as the press implied, to concentrate on the hydrogen bomb.

Knolls itself was to turn its efforts to the development of an atomic ship propulsion reactor for naval use, presumably for submarines. It was made public for the first time that G.E. had been working on the preliminary design of a ship reactor along with its project on atomic power, although it had been assumed generally that Westinghouse had the sole contract for ship propulsion from the A.E.C. The intermediate power reactor was shunted aside; instead the ship reactor is to be constructed as a land-based model at the West Milton site.[8]

At a press interview given simultaneously with this announcement, A.E.C. officials claimed that the sweeping revisions were necessitated by "changes in the international picture"—the announcement of September 1949 that the Soviet Union was well advanced in the field of atomic energy.[9] The A.E.C. chiefs seemed not at all concerned with the most important and dramatic part of the Soviet announcement, that atomic energy had been used successfully in engineering connected with a vast irrigation project. Just as President Truman had met this significant development in the constructive use of atomics with the proclamation that the United States would now concentrate on a super-hydrogen bomb, the A.E.C. and G.E. met the challenge of peaceful competition by abruptly canceling the preliminary work on the power reactor and turning instead to still another warlike application of atomics.

This sharp contrast between the belligerent emphasis of the American atomic development and the constructive line of the Soviet effort cannot be evaded, no matter how the Commissioners may squirm. At one of the periodic meetings of the A.E.C. with the press, held shortly after, a reporter inquired:

"Do I correctly infer that there is less manpower and effort currently in your projected plans going into industrial development than you foresaw a year ago?"

Dr. L. R. Hafstad replied with obvious discomfort: "It depends on just how you interpret industrial development. I would say the intermediate power breeder—which I have referred to many times as being our direct attack on that particular job, since it is used for power and breeding—has been delayed for various reasons, and in this sense I think your statement is correct: There is less effort in that particular result."

Nor could this shift be explained by the expectation that quicker results would be obtained in submarine propulsion than in industrial atomic power. Acting Chairman Pike of the A.E.C. was asked whether an atomic-powered submarine could be expected in 1952, as had been claimed by the admirals seeking even greater naval appropriations from Congress. That forecast was too optimistic, Pike declared, implying that the completion of the first land-based prototype could not be expected before some time in 1952, after which further work would have to be undertaken before the construction of an atom-powered submarine could even be started.[10] On the other hand, according to previous plans, the power-breeder reactor which has now been scrapped, was scheduled for completion toward the end of 1950 or the beginning of 1951.*

G.E. had come out on top. Not only had it sewed up future atomic power development but it had also cut into the field of naval ship propulsion, which until then had been monopolized by its rival. Early in 1951, G.E. also obtained a contract for the development of atomic airplane engines.

As the manufacturer of plutonium, one of the two nuclear components of the atom bomb, and as a leading competitor in the field of atomic propulsion, General Electric is quickly achieving an unexcelled position as a munitions trust. This is a far cry from the toasters, washing machines, and fluorescent lamps with which this firm is prominently identified in its advertising appeal to the public. Munitions have become a topflight interest, just as the militarization of the economy in general has brought other peak monopolies into the armaments business. Atomic munitions top the list, but G.E. is now also involved in other new weapons which are highly automatic, requiring elaborate electronic controls. The lamp trust is an active experimenter for the armed forces with rockets and self-propelled missiles, besides turning out components for other weapons.† In December 1950, Truman named G.E.'s president, Charles E. Wilson, for long a top adviser in the Pentagon, chairman of the Defense Mobilization Board, with central powers exceeding any granted a single agency during World War II.

Electronics and A-Bombs

With General Electric entrenched at Hanford and Knolls, another closely-held Morgan corporation set about gaining control of the key atomic weapons center in New Mexico. By the end of 1949, a Morgan company dominated the Sandia Laboratory.

The first atom bombs were perfected at the Los Alamos Laboratory, which was in charge of the design and development of weapons. During the earlier stages, Los Alamos also processed the nuclear components of the weapon, and assembled the bomb.

It appears, however, that an important phase of the weapons program has increasingly been concentrated at the nearby Sandia Laboratory, at Albuquerque, New Mexico. Sandia started out as a small liaison group between Los Alamos scientists and the military, but since 1945 it has become a major weapons operation. Routine weapons production was transferred from Los Alamos to Sandia. By 1949, some 1,800 workers were engaged at Sandia in developing, assembling, and producing weapons. It is also the base of the Armed Forces Special Weapons Project which is training some 2,000 military men in the use of atomic weapons. General James McCormack, Jr., chief of the Division of Military Application of the A.E.C., described Sandia as "our ordnance engineering development laboratory, and the liaison with the armed forces, with a rather marked industrial aspect." Dr. Mervin J. Kelly, executive vice-president of the Bell Laboratories, who headed a survey mission at Sandia, spoke of "the armed forces special weapons organization at Sandia, which is the junction point with the Commission on use of atomic missiles."[11]

Until mid-1949, Sandia Laboratory was managed by the University of California along with its supervision of Los Alamos operations. Following a survey carried through by the Bell Telephone Laboratories, new plans were formulated for Sandia. According to General McCormack, the task of producing bombs was "much larger than the 'custom' type of manufacture of the weapons that had been made until that time. It was clearly in large part an industrial type of job.

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* However, the persisting public interest in atomic power had to be met in some fashion. In May 1951, the A.E.C. announced negotiations with four groups of business firms to arrange for privately-financed study projects, lasting one year, on the feasibility of the construction and operation of reactors by private companies for the production of both plutonium and power. The most interesting part of these projects is the prominent role played by the utility trusts, which can hardly be expected to spur atomic power. The Pacific Gas & Electric Co. (a pillar of monopoly on the West Coast) combined with Bechtel Corp., an engineering firm engaged in construction for the A.E.C., to form one project. Commonwealth Edison Co. and Public Service Co. of Northern Illinois constitute another group. Dow Chemical Co., engaged in certain phases of the weapons industry, joins the leading Detroit utility to form another, while Monsanto Chemical and the local power company of St. Louis, Mo., form the fourth. This move may throw some light upon the inner struggle between the electric equipment trusts and the utility empires for control over any technique which might lead to atomic power, but it is hardly likely to speed up the development of the new power source.

† More than one-fifth of G.E.'s total production in 1950 was for the armed forces, not including work for the A.E.C. Under the accelerated military program, war materials were expected to account for more than one-third of the trust's output in 1951, as compared with 80 percent during the peak of World War II. (*New York Times,* Dec. 20, 1950.)

The Commission therefore decided to bring industry into this work and certain technical bureaus of the Army and Navy."[12] What the General did not mention was that the transfer of "routine" bomb assembly to Sandia would leave Los Alamos free to concentrate on the hydrogen bomb.

Western Electric Co. and Bell Telephone Laboratories, both subsidiaries of the American Telephone & Telegraph Co., took over the management of Sandia in July 1949. The A.E.C. pointed out that "the new operator of the Laboratory will have an important function in bridging the gap between laboratory development work and the manufacturing operations on atomic weapons."[13]

A special organization was subsequently formed by the Morgan interests to run the weapons center. Sandia Corp. was set up as a fully owned subsidiary of Western Electric Co. The scientific services and managerial assistance of the parent firm and of the Bell Laboratories were placed at its disposal. On November 1, 1949, Sandia Corp. formally took over the weapons base under a contract with the A.E.C. running until the end of 1953.[14] Following the transfer, the A.E.C. rushed the completion of new facilities, including an ordnance engineering laboratory, at a cost of $32.5 million.[15]

With control of the weapons center, the Morgan monopolists strengthened their grip on atomics, including a firm foothold in the most important source of uranium abroad, and control of plutonium and of the main approach to ship propulsion as well as to atomic power. They do not control every phase of the industry, but they are clearly the dominant force in the atomic weapons business. They command one entire cycle of the industry, from uranium and plutonium to atomic bombs.

Chemistry and H-Bombs

On January 31, 1950, Truman ordered the A.E.C. to proceed with the hydrogen bomb.

It is claimed that a bomb might be produced which would spread total destruction within a radius of ten miles, with a blasting power equivalent to ten atom bombs of the latest type.[16] As with the atom bomb, this weapon is intended primarily for the mass annihilation of civilian populations.

Work on the thermo-nuclear weapon had been proceeding for some time before Truman ordered full speed ahead. Systematic research began at Los Alamos some time in 1948. In the autumn of 1949, the weapons laboratory submitted a report to the A.E.C. in which the hydrogen bomb was held to be feasible.[17] On July 1, 1950, Truman asked Congress to appropriate an additional $260 million for the construction of facilities to be used for the production of explosives for the super-bomb. Two days later the A.E.C. announced a new contract with du Pont covering "process feasibility studies, development projects and facility requirements," for a secret undertaking.[18] Obviously this was but the preliminary to the launching of a du Pont atomic enterprise. Finally, on August 2, the A.E.C. made public its selection of the du Pont company to design, construct, and operate the new production center.[19]

The new nuclear explosives works, officially designated as the Savannah River Plant, was to be built at a cost of over $1 billion on a site of 250,000 acres in Aiken and Barnwell counties, South Carolina. Choice of this locality was in accordance with the policy of the du Pont trust, which for some time has been placing new plants in the South where it could take advantage of the semi-colonial status of Negro labor and low-paid white workers, and where prevailing Bourbon-type reaction is in accord with du Pont policies in general. In the Black Belt area, in which the new nuclear explosive plant was to be erected, a number of villages were to be razed and a few thousand farm families, mostly Negro, were to be removed. The inhabitants of Ellenton, the principal town affected, expressed simply the common sentiment among the people in a hand-lettered sign posted at the approach to the village:

"It is hard to understand why our own town must be destroyed to make a bomb that will destroy some one else's town that they love as much as we love ours."

In accepting the new "assignment," the du Pont trust recalled it had withdrawn from Hanford in 1946 because its "industrial field of endeavor is chemistry rather than physics," and stated it was now returning to the nuclear weapons industry "in the interest of national security."[20] This was as good a pretense as any for the accommodation of interests between the Morgan and du Pont monopolists, as a result of which the former remain content with the fission bomb, while the latter take over the fusion weapon. According to the cartel conception of science, it seems one belongs exclusively to chemistry, the other to physics. Perhaps the appeal of a weapon of unprecedented destructive power was too much for the ancient munitions trust. In any case the plutonium-type processes involved in the attempt to make the new weapon were kept from "outsiders," and remained firmly under the control of the established Morgan-du Pont community.

The underlying principle of the new weapon is the transformation of hydrogen into helium by atomic fusion at very high temperatures approaching the heat of the sun.[21] The only known process by which this heat can be obtained is by the explosion of an atom bomb. Therefore it is expected that an atomic explosion of the chain-reaction type, such as is used in the present bomb, would have to serve as a trigger to set off the thermo-nuclear explosion of the super-weapon. The release of energy resulting from this operation is of such intensity and magnitude that it cannot be controlled for industrial purposes, in the way, for example, that the plutonium pile might be employed for useful power. Its only presently forseeable use is as a weapon.

In making the explosive components of the hydrogen bomb, no departure from the basic technology of the atomic industry is involved. The trigger mechanism must be fueled by fissionable material, either plutonium or enriched uranium. Explosive components of the hydrogen bomb itself are confined generally to heavy hydrogen (deuterium) and tritium. The former is already produced in large quantities in the form of heavy water by established processes, du Pont being a leading producer since 1944. Tritium is the most important component, and can be made from lithium, a very light metal. Under neutron bombardment in a uranium pile, lithium gives off helium and tritium in equal amounts. Tritium is already being produced for experimental purposes in the A.E.C. reactors at Oak Ridge and Argonne. Its production in large quantities would require great uranium reactors such as are used at Hanford for the production of plutonium. It has been estimated that the manufacture of one hydrogen bomb would require a plant the size of Hanford operating for more than two years to turn out the necessary amount of tritium from a quantity of lithium metal variously placed at from one-half ton to five tons.*

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* Lithium Corp. of America is the biggest producer of the metal and its derivatives. It also controls the largest ore deposits in the United States and in Canada, where the principal mines are owned by Northern Chemicals, Ltd. which is under contract with Lithium Corp. In metallic and other forms, lithium is used industrially in ceramics, steel-making, and other branches. Present capacity is about 300 tons of metallic lithium annually.

Thus, the effort to make the hydrogen bomb rests on the same essential raw material and technology used for the atom bomb. The reactor in which tritium is made must be fueled with uranium, and the reactor itself is of the same type as that used in producing plutonium. With the return of du Pont to command of a new production center which may rival Hanford, the two trusts which have consecutively managed the plutonium cycle now divide the field between them. Whatever inner conflicts operate, the Morgan and du Pont monopolists share command of the most important sector of the atomic combine.

They are secured in this monopoly by the new and extreme restriction placed upon science, under the pretext of safeguarding still another great secret. The gagging of science had gone to such absurd lengths that scientists were not even permitted to discuss publicly the principles underlying our knowledge of the synthesis of light elements, which can be found in any competent textbook on nuclear physics. On March 17, 1950, the A.E.C. sent a laconic order to all managers of operations to inform the personnel engaged in "classified" work—which means practically the entire atomic industry—that they are to refrain from discussion of thermo-nuclear reactions, the processes involved in the effort to make a hydrogen bomb. In a subsequent order the A.E.C. attempted to pacify the irate scientists by putting this in the form of a "request," but nevertheless insisting that it applied to "unclassified" information as well as data pertaining to weapons. At the same time, Commissioner Pike made it clear that the dictate applied to "anybody recently on a project tied in with the A.E.C.," as well as to those presently engaged in the enterprise,[22] which would seem to include practically all nuclear scientists.

The A.E.C. was apparently ignorant of a book published in Vienna in 1946 under the title, *Die Geschichte der Atombombe,* by the Austrian physicist Hans Thirring, in which he devoted a chapter to the theory of the thermo-nuclear or hydrogen bomb. Even as the gag order was being distributed, this chapter, republished in English translation, in the *Bulletin of Atomic Scientists* of Chicago, was available to anyone who cared to read it. An article by the physicist Hans Bethe, covering the same ground, was censored out of the magazine, *The American Scientist,* and the plates of the article were destroyed.

Never has a cartel enjoyed such complete security of production secrets, nor maintained such stringent control of science.

7. Conflict at Oak Ridge

PLUTONIUM IS NOT the only nuclear fuel used in the atom bomb business. There is another cycle of production, also deriving its material from uranium but involving a technology distinctly different from the process by which plutonium is produced. This phase of the industry is controlled by Union Carbide & Carbon Corp., second only to du Pont among the American chemical concerns.

U-235, Plutonium's Rival

While plutonium is a new element derived from the "burning" of uranium in a reactor, uranium-235, the other fissionable material is an isotope or variant of uranium which is found in the ore as it occurs in nature. But U-235 constitutes less than one percent of uranium and must be separated from its plentiful fellow isotope, U-238, by new and complex processes. The huge plants for the separation of U-235, sometimes called enriched uranium, are located at Oak Ridge, Tennessee.

Compared to plutonium, the production of enriched uranium is more costly and complex. Greater output of this fissionable material depends primarily upon enlarging the massive structures within which this process is carried on, while possibilities of improving the efficiency of the process itself seem limited. In this respect, plutonium has a distinct advantage, because of the possibility of "breeding," that is, using it to obtain more fissionable material from a given quantity of uranium.

The U-235 component of atomic weapons is produced by passing uranium gases through a sort of lattice-work of fine sieves or membranes spaced out over a distance of miles. The gas diffusion plant in which this is done is said to be the largest single process structure in the world. Dr. J. R. Dunning, the Columbia University physicist who helped design this gas chamber, says it is so gigantic that "Even those of us who were associated with it never quite got over the shock of seeing anew the huge U-shaped group of buildings. . . . Over twenty buildings make up the present group, each more than four stories high, each having room for several football fields inside. . . . It is a trip of over twenty miles simply to go past the continuous rows of panels stacked with automatic instruments. . . . Often one may walk in the plant for a long time without seeing a single person; occasionally someone may ride up on a bicycle, take a look at a chart in an automatic controller, and then dash off."[1]

Being an ardent enthusiast of the gas diffusion process, Dunning may be overly impressed by this technological monster. Other scientists do not share his enthusiasm for this separation technology, pointing to its very high capitalization and the lavish cost of production. If it were a matter only of commercial utilization, there appears to be serious doubt that this process would be used for other than limited experimental and scientific purposes.

But since the objective of the atom bomb business is to produce as many weapons as possible, and the costs are only a secondary consideration, the gas diffusion works have been greatly expanded. Following tests of new atomic bombs at Eniwetok atoll in the Pacific in 1947-48, greater emphasis was placed upon increasing the output of enriched uranium. In an annual review of the atomic industry for 1948, *Business Week* characterized "the marked increase in interest" in U-235 as "one of the most surprising developments of the past year." The business journal conjectured that the Eniwetok tests led to the conclusion that U-235 had a role in atomic weapons which plutonium cannot entirely fulfill.[2]

Union Carbide's Domain

Oak Ridge operations in their entirety are controlled by Union Carbide & Carbon Corp. This chemicals-metals monopoly came into the atom bomb business at the very beginning, in raw material supply as well as in production. One of its subsidiaries, U.S. Vanadium Corp., which is the largest producer of domestic uranium ore, supplied the Manhattan District with most of its raw material during the early stage, before pitchblende from the Belgian Congo and Canada could be imported in large quantities. Two other subsidiaries of Union Carbide—Linde Air Products Co. and Electro Metallurgical Co.—supplied purified uranium metal. Bakelite Corp. and National Carbon Co., both also owned by Union Carbide, provided graphite and other materials. These subsidiaries continue to supply the atomic enterprise under the A.E.C.

Union Carbide's main prize, however, is Oak Ridge. In 1943 its principal subsidiary, Carbide & Carbon Chemicals Corp., took over the operation of the gas diffusion plant (K-25). By 1945, when the plant went into operation, about $500 million had been spent on research, development, engineering, and construction.* In the same year, the Carbide & Carbon subsidiary took over the gas diffusion laboratory at Columbia University, establishing complete control over the U-235 process.

Within a short period, Carbide came to control all operations at the Oak Ridge center. In 1947, the corporation took over from Tennessee Eastman Corp. the management of the electromagnetic separation plant (Y-12). This plant was put in stand-by status, only a small part of it being used to turn out stable isotopes for research, while efforts to improve this process continued. At the end of the same year Carbide took over from Monsanto Chemical Corp. the Oak Ridge National Laboratory (formerly Clinton Laboratory). Carbide thus controlled the key facilities at Oak Ridge, bringing them under its single management.

There followed an extensive expansion program, with the capital as usual furnished by the A.E.C. By the end of 1949, a new addition to the original gas diffusion plant was in operation, another $70-million plant was well along in construction, and a fourth addition for the output of enriched uranium which will cost about $160 million had been started. Union Carbide was in charge of production facilities representing a capital investment of at least $1.5 billion.

Among the new nuclear facilities projected at the end of 1950, in connection with the greatly expanded military program, were the gaseous diffusion works on a site of some 5,000 acres near Paducah, Kentucky. Nearly half of the supplementary appropriation of over one billion dollars for atomic energy was to be spent on this new production center. As the A.E.C. announced in advance, Union Carbide would be in charge

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* Research and development of the gas diffusion process was centered at Columbia University, and carried out by a group known as the SAM Laboratory, under the direction of Harold Urey and John R. Dunning. Development of process and equipment and designing of the plant were undertaken by M. W. Kellogg Co. (a subsidiary of the Mellon-Morgan controlled Pullman Co., Inc.) which set up Kellex Corp. for this purpose.

thus confirming that trust's permanent monopoly of enriched uranium.[3] Carbide now holds the most important secondary position in the atomic enterprise. Its range of control reaches from domestic uranium ores, through some important stages of the preparation of feed materials, to one of the two processes for the production of nuclear bomb components. However, the Morgan trusts hold by far the superior position over a much wider range of the industry, by virtue of their strong influence in companies controlling the principal sources of uranium, which are abroad, their domination of plutonium and the closely linked avenues leading to atomic power and propulsion, and their top role in atomic weapons production. But despite their overwhelming influence in the industry as a whole, and the dominant position of this monopoly group within the general economy, Morgan corporations and the allied du Pont group cannot enjoy an absolute monopoly so long as Union Carbide controls enriched uranium.

Fight of the Titans

Accordingly, Union Carbide has become the focus of a sharp struggle among the peak monopoly groups.

With assets approaching three-quarters of a billion dollars, Union Carbide is among the hundred trusts at the apex of the American corporate structure. It was organized in 1917 as a merger of a number of companies, and quickly attained a top place in the relatively new chemical industry that arose in the United States as a result of World War I. While the du Pont firm is by far the top chemical trust of the country, Union Carbide established a leading position in electrochemical and metallurgical products as well as in synthetic organic chemicals. On the eve of World War II, three trusts—du Pont, Carbide, and Allied Chemical & Dye Corp.—controlled two-thirds of the chemical industry of the United States.[4]

Judging from all outward manifestations, Union Carbide is not visibly dominated by a top-ranking monopoly group. No single controlling stock interest is uppermost,* nor does any director of the parent trust seem to stem from the Morgan, Rockefeller, du Pont, or Mellon inner circle. The only recent change of significance on Carbide's board of directors occurred at the end of World War II, when an associate of the Cleveland monopoly group was added.*

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* It is listed by the T.N.E.C. among the big corporations without apparent dominant stock interest. In 1939, the officers and directors of the combine held 113,658 shares, or 2.5 percent of the outstanding stock. About 1.4 million shares, or over 15 percent of the total, were held by 19 of the largest known stockholders, including company executives. Nine individuals between them held 5 percent, seven undisclosed beneficiaries held 7 percent, while the Acheson

However, certain historical and current associations suggest that this powerful chemical trust maintains a community of interest with the Mellon and Rockefeller groups rather than with others. In 1914 the Mellon Institute conducted research on organic synthesis on behalf of companies which later became units of Union Carbide. George O. Curme, Jr., who headed this work at the Mellon Institute, became the chief chemist of Carbide's chemical subsidiary which was established to commercialize the results of the preceding research, and he subsequently became vice-president and director of various Carbide companies, including the unit now in charge of the production of enriched uranium. Since Mellon's research institution has no illusions about pure science, it is to be assumed that certain connections were established and some advantages accrued to the Pittsburgh tycoons as a result of Curme's successful work. In fact, at least up to the recent war, three Canadian subsidiaries of Carbide had important directors in common with units of Mellon companies in the Dominion, and the president of Carbide's metallurgical company at Niagara Falls was a director of the Mellon-controlled Carborundum Co.[5]

The historical association, dating back to the period of the first World War, obviously operated quite effectively in the allocation of the atomic industry at its very inception. As we saw in Chapter 1, Curme was a member of the Planning Board, controlled by the Rockefeller and Mellon interests, which assigned Oak Ridge operations to Union Carbide. This inter-corporate association also reaches into the field of domestic uranium ores, which is dominated by the vanadium cartel formed by the Carbide mining subsidiary and another company under control of a branch of the Rockefeller family and the Mellons (see Chapter 12).

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family (unrelated to the Secretary of State) held 1.66 percent. (Monograph No. 29, pp. 269, 1504.) Little change seems to have occurred in ownership of stock since then. In 1948, twenty-one officers and directors of the company held 728,435 shares, which still amounted to 2.5 percent of the outstanding stock. The biggest stockholders among the company officials are Fred H. Haggerson, president of Union Carbide, with 95,700 shares, followed by Edward S. Whitney, a director, with 89,580 shares. (Securities and Exchange Commission, *Official Summary of Security Transactions and Holdings,* May 1948.)

* John P. McWilliams, who is a director of Youngstown Sheet & Tube Co., Goodyear Tire & Rubber, and National City Bank of Cleveland.

Thus, the entire segment of the atom bomb business under Carbide's control may be considered the principal sphere of a much broader grouping of monopoly forces, seeking to maintain and extend their foothold within the atomic industry. Undoubtedly, this circumstance serves to explain at least in part the expansion of the U-235 process, which involves exceedingly high capital costs and is wasteful when compared with plutonium, since this was one way of establishing a rival branch in that sector of the industry firmly within the grip of the Morgan and du Pont trusts.

The latter were unceremoniously ousted from Oak Ridge. In taking over all operations at this production center, Union Carbide displaced Monsanto Chemical Corp., which played an important role under the Manhattan District, and it also fell heir to the pilot reactor which had been run by du Pont. Monsanto is tied in with local financial circles of St. Louis, but the John Hancock Life Insurance Co. of the New England monopoly group is a major stockholder. In 1946, when the struggle for control at Oak Ridge was reaching a peak, J. P. Morgan & Co. became the trustee for a $30-million loan to Monsanto which was placed privately among a number of insurance companies. A Morgan partner, Charles S. Cheston, then became a director of the chemical company. Monsanto managed to obtain charge of a secondary atomic project elsewhere, but its forced retreat from Oak Ridge nonetheless was a defeat for the Morgan and associated interests.

Some time afterward, in December 1947, when Union Carbide had gathered all Oak Ridge operations under its wing, the Metropolitan and Prudential Life Insurance Companies participated about equally in a loan of $150 million to the big chemical combine. Then, in November 1951, the same insurance companies participated equally in a loan to Carbide of $300 million for the unprecedented period of 100 years. These huge loans, providing for long-range financial supervision by the giant insurance trusts, in themselves offer no conclusive evidence of a shift in control of the chemical combine toward a single monopoly group. Metropolitan is generally considered well within the Rockefeller sphere of influence, Prudential more under Morgan control, and the two monopoly groups interlock in both insurance companies.[6] But the size and terms of the loans do indicate that control of Union Carbide is shifting from a secondary banking center, with which it has been long associated, into the sphere of the peak finance-capitalist groups.

Union Carbide is linked closely to a secondary but powerful finance-capital grouping, which centers in the Central Hanover Bank & Trust Co.* This bank has assets of over one billion dollars, and ranks among the top ten banks of the country.

Central Hanover is the banking center for a number of very wealthy families—among them the Woodward, Davison, Iselin, and Gray clans—controlling a few important corporations, and participating in others dominated by the peak monopoly groups. Carbide is by far the most important industrial corporation linked with Hanover. The bank's trustees seem to dominate the leading group of fire insurance companies—Continental and Fidelity-Phenix, in which there is also some Rockefeller interest. The other outstanding connections of Hanover board members bring them into contact with the top monopoly groups—without, however, placing Hanover under the domination exclusively of any single group.

Before World War II, Hanover trustees were to be found on the boards of three Morgan companies, five railroads of the Kuhn-Loeb banking group, two Mellon corporations, the Rockefeller-controlled Chase National Bank, and the United Fruit Co. of the Boston monopoly group.[7] Its trustees were also directors in peak corporations, control of which is shared by a number of monopoly groups.†

As matters stood in 1950, Hanover trustees maintained significant ties with metal mining trusts. The Hanover board now has three directors in common with Phelps Dodge Corp. and New Jersey Zinc Co., in addition to its three common directors with Union Carbide and the Fidelity-Phenix insurance group. The Phelps Dodge copper

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* George W. Davison and William S. Gray, Jr., honorary chairman and president respectively of Hanover, are directors of Union Carbide. Fred H. Haggerson, president and leading stockholder of Carbide, is on the board of Hanover, while Benjamin O'Shea of Carbide's executive committee is a former trustee of the bank.

† Hanover was most heavily represented, to the extent of two or three directors, on the boards of General Foods, Texas Corp., and Third Avenue Railroad Corp. The president of General Foods is a director of Chase National Bank but Lehman Bros. and the Morgan group also share control of the giant food monopoly. Texas Corp is one of the largest so-called independent oil corporations, with mixed control. Rockefeller, Morgan, and other interests are to be found in the Third Avenue Railroad. Other corporate connections of Hanover trustees included powerful trusts, among them Mutual Life Insurance (Morgan), Prudential Life Insurance (Morgan-Rockefeller), Chrysler Corp., Shell Union Oil, and Paramount Pictures.

corporation traditionally moves in the Morgan sphere, although Rockefeller influence within it has recently grown. Louis S. Cates, chairman of Phelps Dodge, is a trustee of Hanover, while the president of the bank is a director of the copper company. Jersey Zinc is also very close. The honorary chairman of Hanover as well as the present head of the Woodward family, which founded the bank, are both directors of the company, whose vice-president is a Hanover trustee. The zinc company may be considered close to the Morgan circle. Lewis Douglas, ex-ambassador to Britain, whose family is associated with the Phelps Dodge interests, was a director of this company before he went to London. Jersey Zinc is engaged in the huge Quebec iron-titanium venture jointly with Kennecott Copper Corp., a Guggenheim-Morgan enterprise.

The appearance of William A. M. Burden among Hanover trustees also emphasized greater interest in the mining trusts. Burden left Hanover in 1940 to take a government post, and returned to the bank in 1949, after serving as Assistant Secretary of Commerce. He had also acquired a number of directorships in mining companies, among them American Metals Co., Ltd., and Cerro de Pasco Copper Corp. As will be shown later, the Morgan stake in American Metals has increased greatly since the end of the war, while a Morgan-Guggenheim copper combine is a big stockholder in Cerro de Pasco.

These connections suggest that the Morgan influence within Hanover, the controlling center of Union Carbide, is quite substantial, and may have grown in the recent period.

However, rival monopoly groups also maintain strong positions in Hanover. The top officials of corporations primarily within the Rockefeller and Mellon spheres of influence have moved into the bank in greater profusion during the recent period.

When it comes to a struggle with the powerful Morgan banking group, the Rockefeller and Mellon interests are often to be found in alliance, and this is especially the case in the atomic industry. Thus, one finds on the board of Hanover G. A. Price, president of Westinghouse, the Mellon-Rockefeller rival of General Electric. Another Hanover trustee is A. G. Pratt, chairman of Babcock & Wilcox Corp., the power equipment firm which boasted John Foster Dulles as a director. G. M. Moffett, chairman of the board of Corn Products Refining Corp., the food monopoly which moves generally within the Rockefeller sphere, is also on the bank's board. General Foods, which is under mixed control, is represented on Hanover by C. M. Chester, its honorary chairman, who also serves on the Advisory Committee of the Chase National Bank. The banking investment-house of Dillon, Read & Co., which maintains close relations with Chase National and with Rockefeller oil companies, does securities business with Hanover, and also has a stock interest in Union Carbide.

Among the other two score or so corporations which have interlocking directorates with Hanover, the general characteristic noted previously of the predominance of mixed companies or of firms distributed widely among the chief monopoly groups still prevails.* But the new factor is the gradual weakening of Hanover as a more or less independent family banking institution, and the crystallization within it of a struggle for control between the Morgan group, on the one hand and the Rockefeller-Mellon combination, on the other.

Among the great prizes of this struggle is control of the output of enriched uranium. The allocation of the Oak Ridge process to Union Carbide in the initial stage of the industry was the outstanding victory of the Mellon-Rockefeller bloc, for while this grouping does not control that chemical trust, the Morgan-du Pont consortium was at least kept out of this branch of atomics. Subsequently, by virtue of historical association with Carbide and substantial interests in Hanover, the Mellon-Rockefeller grouping succeeded in reserving U-235 as its own special sphere of influence, *vis à vis* the rival process and the rival monopoly grouping. Plutonium and enriched uranium have thus become competitive products within the single government-owned industry, involving separate processes and rival monopoly groups.

With the appearance of the du Pont chemicals-munitions trust as a major A.E.C. contractor, this time as co-ruler with General Electric over the plutonium cycle (including the tritium component of the hydrogen bomb), the general position of the Morgan grouping within the industry was strengthened. But the rival branch was also expanded by the construction of new units at Oak Ridge, and the projected diffusion center in Kentucky will come under the wing of the monopoly complex gathered around Union Carbide.

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* Among the most important is Chrysler Corp. Hanover has two directors in common with this auto trust: George W. Davison, honorary chairman of the bank is on Chrysler's board, while K. T. Keller, president of the auto company is a Hanover trustee. In 1950, Keller was placed in charge of the armed forces production program for guided missiles, and a Chrysler director, Thomas E. Murray, became a member of the A.E.C.

Naturally, strenuous efforts are made from both sides to alter this relationship. It may be considered a consequence of the natural law of corporate concentration that the Morgan-du Pont consortium should strive for complete hegemony, while the Mellon-Rockefeller bloc resists every effort to penetrate its own sphere and seeks to expand within the industry.

Despite participation in the Union Carbide complex, and a significant role in other aspects of the atom bomb business, the Mellon-Rockefeller grouping has not been able to seize exclusive and clear-cut control of a major nuclear production center. When the Morgan grouping emerged into the pre-eminent place after the war, it could not eliminate the rival group from important secondary positions, but it did succeed in blocking the Mellon-Rockefeller combination at strategic points, as in the field of atomic submarine propulsion. It is also worthy of note that Allied Chemical & Dye Corp., in which the Rockefeller group has a substantial influence,* plays a minor role in atomic industry, although this corporation ranks with du Pont and Carbide among the big three of the chemical industry.

The conflict is expressed, not always directly, in the upper structure of control. As a result of considerable pressure from the Mellon and Rockefeller corporations, the A.E.C. appointed an Industrial Advisory Group in 1948 to investigate and make recommendations for broadening "industrial participation" in the atomic enterprise. Of the ten members on this body, five represented oil corporations, four of which are within the Rockefeller-Mellon sphere. Executives of the du Pont trust and Bell Telephone left the Advisory Group before its final report was submitted, to accept appointments to top permanent committees of the A.E.C. The Industrial Advisory Group was thus left almost entirely in the hands of the Rockefeller and Mellon interests. Their report,[8] issued at the end of 1948, naturally stressed above all else the need for "greater participation of industry" in the atomic enterprise.

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* Solvay et Cie. of Belgium is the biggest stockholder of record owning 23 percent of Allied Chemical's stock through American subsidiaries, North American Solvay and Solvay American Corp. The Rockefeller group has a strong position within these holding companies, and in the chemical firm. Eli W. Debevoise, a personal representative of the Rockefeller family, is on the board of Solvay American, while Carl J. Schmidlapp, senior vice-president of Chase National Bank, is a director of Allied Chemicals. George Murnane, a partner of Lazard Frères of New York and associated with the Rockefeller interests in a number of companies as well as in his capacity as a trustee of the Rockefeller Institute, is a director of both Solvay American and Allied Chemical. John C. Traphagen, also a trustee of the Rockefeller Institute and an associate of the Rockefellers in insurance enterprises, is on the board of Solvay American. This holding company also includes as director Arthur H. Dean, a partner in Dulles' law firm of Sullivan & Cromwell. Among the holdings of Solvay American Corp. is a block of Union Carbide shares, in 1938 placed at 20,305. The Dulles connection is of interest in view of his role in the maintenance of U.S.-German cartel relations. Solvay was a participant in the pre-war chemical cartel alongside I. G. Farben of Germany. In December 1950, an East German court found officials of the Solvay branch in Germany guilty of hiding Farben's control of the enterprise.

But it was not until the end of 1950 that some significant changes occurred in top A.E.C. bodies. Following the resignation of Lilienthal as chairman of the A.E.C., General Manager Carroll L. Wilson, an intimate of the M.I.T. hierarchy, was also forced out. He was replaced in November 1950 (at about the same time as Commissioner Lewis L. Strauss resigned and joined the Rockefeller family investment firm) by Marion W. Boyer, a senior officer of Esso Standard Oil Co. in charge of all manufacturing operations. Boyer had served Rockefeller's oil trust for over two decades as a working scientist and production executive. Simultaneously, President Truman appointed E. V. Murphree, president of the Standard Oil Development Co., who had headed the old Planning Board of the wartime atomic project, to the General Advisory Committee of the A.E.C.

These changes corresponded to practical gains which had been made in the atomic business by the Rockefeller grouping. Aside from the influence successfully maintained within the expanding branch of the industry under Union Carbide's control, the Mellon-Rockefeller bloc had won the initial advantage at the new Arco reactor-testing center, had expanded in the sphere of nuclear research, and had obtained an important foothold within the trust controlling Congo uranium.

8. From Piles to Isotopes

THE CORPORATIONS COMMANDING the principal production centers play the dominant role in the nuclear weapons industry as a whole. But the inter-monopoly conflict for domination of the new war technology extends throughout the entire enterprise, into the secondary as well as the primary branches.

In this booming munitions industry, the effort to expand the output of nuclear explosives is paramount. Therefore, the development of new techniques and improvement of established processes play an unusually important role. Monopolies already in control of the most important processes want to command every development to safeguard their dominant positions, while the trusts seeking wider entry into the industry attempt to seize control of special projects and such secondary operations as may be available.

In this respect, the construction and management of the reactors of a new type, design and engineering of processes, procurement of equipment, and control of technical innovations play the most significant role. Science and research, which have been harnessed to the armaments business, will be considered separately.

Mellon and Rockefeller at Arco

In 1950, construction of the National Reactor Testing Station at Arco, Idaho, was begun. This is intended as the machine-making center of the atomic industry. Eventually it may become as important as the major production centers.

It is situated on some 400,000 acres of a former naval reservation, a tract comparable in size to the Hanford plutonium undertaking. A number of new reactors are to be constructed on this site, together with elaborate sustaining facilities. Of the four new machines planned by the A.E.C. at the beginning of 1950, three are scheduled for the Arco station. These are the experimental fast breeder reactor, the materials testing reactor, and one of the ship propulsion engines. The other naval reactor, for which the power pile was discarded, is to be built on the Knolls Laboratory site at New Milton, New York, well within the zealously guarded domain of General Electric.

Of the three key atomic facilities to be built at Arco, the Mellon-Rockefeller combination has its hands on one, the naval reactor. Until General Electric laid aside its experimental power machine to design a naval reactor, Westinghouse Electric & Manufacturing Co. had been the sole active participant in this field. A joint enterprise of the Mellon and Rockefeller groups, with the former predominant,* Westinghouse is a rival of the Morgan corporations in atomics. The company is not a newcomer in the bomb business. It played a substantial role in the Manhattan District. Westinghouse processed pure uranium, and also built the large-scale model of the centrifuge for the separtion of U-235, a method soon discarded in favor of gas diffusion. Westinghouse scientists also participate in the work of the Argonne National Laboratory, which is the main center of reactor research.

The naval reactor was the only claim of the Mellon trust to an exclusive atomic project. Since 1945, Westinghouse held the research contract awarded by the Navy for atomic ship propulsion (known as NEPS), and at the end of 1948 the A.E.C. gave it a contract for the engineering, construction, and operation of the reactor. In October 1948, Westinghouse signified its intention of breaking into the atomic industry more energetically when it set up an Atomic Power Division as part of the corporation to undertake work for the A.E.C. and to initiate independent activities in the field of atomic development. Supplementary research programs at the Mellon-controlled Carnegie Institute of Technology and the University of Pittsburgh were enlarged. According to a company statement early in 1950, its atomic engine was being designed for use in submarines, and initial work was proceeding at the old Bettis airport near Pittsburgh.[1]

Again Westinghouse faces its old rival, General Electric, in a field which apparently had been preempted by the Mellon-Rockefeller trust. These giant corporations are engaged in a race for control of atomic-powered naval engines; each is working on different processes closely

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* Eight directors of companies under Mellon control are on the board of Westinghouse, along with four directors of Chase National Bank, including its chairman, Winthrop W. Aldrich. A partner of Kuhn, Loeb & Co. is also a director of Westinghouse.

guarded from the other, and each seeks to establish a dominant position in the field of atomic engines in general.

Electric Boat Co., which enjoys a virtual monopoly of submarine construction, was awarded the Navy contract for building the hull of the projected atomic engine to be constructed by Westinghouse. Although Electric Boat shows no evident dominant ties with a single monopoly group, historically it has tended toward the Morgan sphere.[2]

The materials tester, which is to be constructed at Arco, will subject to intense neutron bombardment various materials used in the construction of reactors. According to the A.E.C., this nuclear machine "will play a vital part in the development of atomic plants for the production of power and atomic engines for the propulsion of ships and possibly aircraft."[3] It is undoubtedly a vital project in the further development of the new munitions industry.

Westinghouse obtained a foothold when the contract for design and engineering of the materials tester was obtained by the Blaw-Knox Construction Co. of Pittsburgh, whose parent firm (Blaw-Knox Corp.) is closely interlocked with the Mellon-Rockefeller electrical equipment trust. Mellon engineers were granted the full benefits of the research and preliminary designing of the reactor which had been carried on at the Argonne and Oak Ridge national laboratories. Design of the new reactor is already far advanced, the $20-million construction contract having been given out in February 1950 to the Fluor Corp., Ltd., of Los Angeles, which will build the new facilities under the engineering direction of the Blaw-Knox company. The contract for operating the materials tester was later granted to the Phillips Petroleum Co.

The experimental breeder, which is the other reactor to be located at Arco, is further advanced, its first test being expected by the end of 1951. Upon the success of this reactor depend the immediate prospects for increasing the amount of fissionable material that can be obtained from uranium, in the hope that a plutonium reactor can be made to produce more nuclear fuel that it consumes.

In 1950 the design for the breeding reactor was granted to Austin Co. of Cleveland, which has previously completed construction costing $60 million at Oak Ridge and at the Argonne National Laboratory. Bechtel Corp. of San Francisco was awarded the contract for construction of the breeder. These awards do not necessarily determine the monopoly group which will emerge in actual control of operations. Personnel of Argonne National Laboratory, which is administered by the University of Chicago, are assigned to operation of the breeder.

Evidence of the fight for control can already be seen in the preliminary advisory committees for Arco operations. Most important of these is the Processing Advisory Committee,* which was named in December 1949 in connection with the planning of chemical and metallurgical facilities. The chairman of this committee is F. W. Schumacher, associate director of Standard Oil Development Co., a component of the Rockefeller trust, and a wartime associate of Mellon companies in engineering the centrifuge and other processes at Oak Ridge.[4]

The appointment of Schumacher as head of the Processing Advisory Committee indicated the important foothold gained by the Mellon and Rockefeller groups at Arco. This advantage is undoubtedly strengthened by the presence in the committee of a Union Carbide man from Oak Ridge. But a G.E. scientist from Knolls is also a member.[5] The trend is indicated by the first major contract awarded under the Schumacher committee. The American Cyanamid Co., which traditionally has been associated with the Mellon circle, was placed in charge of the huge chemical processing plant under construction at Arco.

The Rockefeller-Mellon combination seems to have obtained the initial advantage through direct control of certain key operations and through its influence at Argonne National Laboratory, which supervises the reactor program. But over-all control of Arco is not yet crystallized. It is hardly to be expected that the monopoly group dominating the production centers will not put up a sharp contest for control of this focal development station.

Supply, Engineering and Special Projects

Procurement of materials for the atomic enterprise, running into hundreds of millions of dollars annually, is handled chiefly by the private corporations engaged in various phases of the industry as contractors of the A.E.C. Out of 67 procurement agencies listed by the A.E.C., 35 are private monopolies, and the remainder are field offices, national laboratories, and departments of the Commission.[6] Since the

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* Another committee was soon set up. This three-man Engineering Advisory Committee is headed by General L. J. Sverdrup, president of a St. Louis, Mo. engineering firm specializing in heavy construction. During the war Sverdrup served under General MacArthur, and later became commanding general of the Engineer Construction Command in the Southwest Pacific. Whatever affiliations he may have for particular corporations, the head of the Arco engineering advisory body has the necessary background for a munitions undertaking.

private contractors that design, engineer, construct, and manage the installations are authorized to make their own purchases, the bulk of procurement is made through them.

Probably the most important A.E.C. procurement agency is the New York Field Office. It administers more contracts than any other office of the A.E.C. The New York agency is primarily responsible for the preparation of feed materials for the atomic furnaces and diffusion plants, as well as for special procurement for the weapons centers. It is also used by other agencies of the A.E.C. as a procurement office for new material and equipment not available on the open market, which runs to about $100 million annually. The New York office is therefore a focal point for controlling materials and apparatus used in nuclear production. The integration and co-ordination of this diversified field is facilitated by non-competitive contracting, which safeguards the position of a few entrenched companies.

The system of chosen firms is of special importance in the area of feed materials, where new techniques are involved. A virtually new industry has been established in the processing of raw uranium. Some two score plants are involved in the preparation of feed materials, and in 1949 a laboratory was opened in New Brunswick, New Jersey, specializing in their analysis.

This sphere of the atomic industry is not as highly monopolized as either raw materials or production. At the present stage, its relation to monopoly in the industry as a whole may be compared roughly with the relationship of the parts-manufacturing firms to the automobile trusts. Some of these are subsidiaries of the auto trusts, others fulfill more or less the role of subcontractors, formally autonomous but actually very much dependent upon the companies to which their products are channeled.

In atomics a number of the firms preparing feed materials are connected with the chief monopolies dominating the industry. Thus, Electro Metallurgical Co. and Linde Air Products Co., which play a prominent role in the preparation of feed materials, are subsidiaries of Union Carbide. Westinghouse produces purified uranium metal. M.I.T. and Battelle Memorial Institute, among the top research institutions of big business, hold A.E.C. research contracts in this field. National Lead Co., a major metals producer, in 1951 entered the atomic industry in a big way when one of its subsidiaries was placed in charge of a new feed materials production center at Fernald, Ohio, which represents a capital investment of at least $30 million, and will employ about 1,200 permanent workers.

At the same time, a number of "independents" are to be found in this phase of the industry. Among the most important is Metal Hydrides Co., a subsidiary of Ventures, Inc., one of the medium monopoly combines active in the sphere of mining, about which more will be said later. Others having no apparent ties with the main monopoly groups are Harshaw Chemical Co., Mallinckrodt Chemical (which was authorized in 1950 to sell uranium metal rods for industrial research), and Vitro Manufacturing Co. It is characteristic of the feed materials contractors that they have been in the industry from the time of the Manhattan District.

In the development of the new munitions industry, design, engineering, and construction of the elaborate facilities are also a major business. Once the basic research is completed, the private corporations, some of which may have participated in the initial experiments, step in to take over—from the first architectural design to the completed construction.

Only the very big firms can qualify with the necessary financial resources, skilled personnel, production organization, and the established set-up for the procurement of material. Medium firms, even fairly large ones, have a chance only as subcontractors.[7]

For the very large contracts, special subsidiaries are sometimes set up by a major corporation, or a number of contractors traditionally working with one of the manufacturing firms may be combined. An example of the first is the Kellex Corp.,* set up by M. W. Kellogg Co., a subsidiary of Pullman, Inc., for developing the $500-million gas diffusion plant at Oak Ridge. Subsequently, Kellex received additional contracts from A.E.C. totaling $108 million for design and engineering of process work at Hanford, and for development of a new chemical process. The leading construction contractor in the atomic project after the war has been the Atkinson-Jones Co., which in 1947-48 received from G.E. contracts totaling $185 million for process construction at Hanford.*

The most important special projects, dealing with nuclear weapons, are not mentioned in the literature available to the public. It can be assumed that the same pattern of monopoly control characteristic of the industry as a whole also prevails here.† It is known, for example, that the A.E.C. is engaged in research on radioactive poisons for military use. Projects concerned with the handling of radioactive wastes from atomic furnaces also have special significance in this respect, since research on contaminating waste has a direct bearing on radioactive warfare. In these projects and on the special advisory groups concerned with these problems are to be found Union Carbide (jointly with the Army Chemical Corps), and other companies‡ specializing in gases, filters, and absorbents.[8]

Aviation companies have also participated in the atomic project, in the effort to develop an atomic air propulsion engine. This project, known as NEPA, has been a pet undertaking of the Army Air Force since 1945, when a primary contract was given Fairchild Engine & Airplane Co. to undertake and co-ordinate research in this field. Fairchild has been in charge, but with some participation by North American Aviation Co. and the Rand Project. Rand is a secret weapons research organization set up jointly by the Army Air Force and the Douglas Aircraft Co.

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* In 1950, Kellex Corp. was bought by Vitro Manufacturing Co., a chemical firm specializing in work for the A.E.C. Albert L. Baker, who designed the gas diffusion plant, became president of Kellex. Vitro's headquarters are in Pittsburgh, but a substantial position in the firm seems to be held by the Rockwell family of Boston, which has important industrial interests in the midwest, including the auto and auto-parts industry.

* The firm is a combination of Guy F. Atkinson Co. and J. A. Jones Construction Co. The latter built the gas diffusion plant at Oak Ridge under the supervision of Kellex Corp., which also designed the facilities built by the Atkinson-Jones company at Hanford. Other leading contractors who received major awards from the A.E.C. in 1947 and 1948 are: Giffels & Vallet Co., $72 million for design and engineering at Hanford, and another $7 million for similar work at the Marion, Ohio, laboratory of the A.E.C., which is under the management of Monsanto Chemical Corp.; Austin Co., $60 million for construction at Argonne and Oak Ridge, and later an unspecified sum for work at Arco; Skidmore, Owings & Merrill, $57 million for master plan and design of community at Oak Ridge; W. C. Kruger Co., $40 million for similar work at Los Alamos; and Voorhees, Walker, Foley & Smith, $36 million for construction of facilities at Argonne.

† Among secret projects which have been reported are: a special chemical plant under construction at Dana, Indiana, with the du Pont trust in charge of operations, and the Girdler Corp. as its building subcontractor (A.E.C., Information Release No. 400); a new production plant in the Rocky Flats area of Colorado, at an estimated cost of $45 million, to be operated by Dow Chemical Co., and constructed by Austin Co. (Information Release No. 357); and a munitions project at Pantex Ordnance Plant in Texas, which will employ 1,000 persons, and for which the operating contractor was not announced (Information Release No. 339).

‡ These include Owens Corning Fiberglass Co., A. D. Little Co. of Cambridge, Mass., American Air Filter Co., and other commercial manufacturers of filter media. Work on gases containing radioactive waste is carried on by Air Reduction Sales Co. Laboratory (part of the combine sharing the monopoly of domestic uranium), American Smelting & Refining Co., and Mine Safety Appliances Co. Monsanto and Dow Chemical are engaged in research on liquid wastes.

Apparently, the air propulsion project has difficulty in getting out of the research stage. In the face of sharp attacks upon the A.E.C. by the Army for failing to support NEPA, M.I.T. was given a contract by the A.E.C. in 1948 to survey the project. The recommendations of its so-called Lexington Report remain secret, but it is said that the M.I.T. specialists were not very optimistic about the prospects for atomic-engined planes. According to statements by A.E.C. officials in January 1950, the airplane project was not even near the design stage at that time. Efforts by the Air Force are continuing through NEPA, the National Advisory Committee for Aeronautics, the Bureau of Aeronautics, and the A.E.C. A special Technical Advisory Board was appointed early in 1950, working at Oak Ridge, to accelerate the development of a nuclear engine for aircraft.[9]

Shortly after this special board was established, the air project was reorganized. The contract with the NEPA Division of the Fairchild company was terminated in April 1951. At the same time, the Air Force and the A.E.C. opened contract negotiations with General Electric for the development of a nuclear reactor for aircraft, to be undertaken by its Aircraft Gas Turbine Division. Thus G.E. was becoming solidly entrenched in the field of atomic propulsion of both submarines and planes.

A New Drug Cartel

Next to experimental work on atomic power, now entirely discontinued, the main pretense to the constructive application of atomics rests upon the production and distribution of radio-isotopes. This activity is a by-product of the nuclear weapons industry, and represents only a tiny fraction of the total effort. Moreover, radio-isotopes are used extensively in military research, while their distribution for other purposes remains limited.

According to the A.E.C., over 7,000 shipments of radioactive elements for research purposes were made in the three-year period ending August 1949. Eight percent of these were exported. Over half the domestic shipments was for experimental work in therapy and biology, largely for research connected with the munitions program. One-seventh was for research in physics and chemistry, which are the most closely guarded sciences. Despite the flowery talk about the industrial potentials of atomics, only three percent was designated for industrial research.*

A great deal has been said about the export of isotopes to other countries, which is supposed to prove that the chiefs of the new munitions industry are seriously concerned with the constructive use of atomic energy on an international scale. Actually, exports have been very small, restricted to only one-fifth the number of radioactive elements produced in the American establishment, and representing only a tiny part of total isotope output. Moreover, exports are limited to those elements applicable to clinical and biological research, while isotopes useful in physics, chemistry, and industry are generally not available.† Those countries subscribing to the American hegemony, including Spain and Japan, and also Argentina, are qualified to receive isotopes, while countries outside the Anglo-American bloc have been demonstratively barred.

Before a country may receive an isotope from the United States, it must practically surrender its sovereignty. An application must first be presented to the Secretary of State, giving full information on the intended use of the element and on the individual who is to use it for research. Once having passed the scrutiny of assorted intelligence and loyalty agencies, the applicant must agree to furnish the A.E.C. semiannually with a progress report on each separate shipment, and the results of the research must be made available to the United States. Moreover, visiting American scientists are to be given free access to the work in progress.

Isotope exports are intended as a political rather than a scientific measure. The decision to authorize foreign shipments was made entirely on diplomatic grounds, as part of the foreign policy of the United States to win "allies," and as an effort to retain the good will of scientists abroad who were critical of the American expansionist policy.[10] American scientific capital rates low in the outside world. The A.E.C. General Advisory Committee had to admit that its motive in supporting the export program was the hope it would "have a great effect in restoring the confidence of scientists, and educated men generally, in foreign countries, in their colleagues in the United States."[11]

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* According to the Tenth Semiannual Report of the A.E.C., up to July 1951 more than 18,000 shipments of radio-isotopes had been made to users in the United States, and 1,000 to foreign users. Of the domestic shipments, almost half was for medical therapy, about 20 percent for physics and chemistry, and 4 percent for industrial research.

† It was not until July 1951 that the A.E.C. permitted all radioactive materials sold in the United States to be exported to its selected foreign customers, and also for the first time allowed their use abroad for industrial purposes.

In the United States, the isotope business has the earmarks of a new drug and specialized chemical cartel. Products like radioactive iodine, used in the study and treatment of thyroid disorders and special types of tumors, and radiostrontium, which is useful in industry as a measuring agent, are on the way to becoming monopolized by private companies.

Union Carbide controls the chief center of radio-isotope production at Oak Ridge,* as well as important research with these elements at the national laboratory situated there. New facilities were established at this center for the handling and packaging of radioactive elements. Other private corporations are sometimes granted facilities at Oak Ridge for special industrial research.†

A private business in labeled radioactive compounds—the form in which isotopes are usually distributed for medical and industrial use—has been encouraged and financed by the A.E.C. While the A.E.C. continues to control the allocation of radioactive elements, commercial laboratories are taking over the business of the preparation and distribution of compounds. Over 65 radioactive preparations are now marketed by private companies. Of these firms, the most important are Abbott Laboratories of Chicago, an established drug corporation, and Tracerlab Inc., a unit of American Research & Development Corp., which is one of the leading business enterprises of M.I.T. The A.E.C. also gives financial assistance to the commercial laboratories for the development of new compounds, with present contracts covering 45 new products. It is the policy of A.E.C. to discontinue production of a compound in its own laboratories as soon as it becomes commercially available.

Also with the help of the A.E.C., a new industry was created in the development and manufacture of radiation detection instruments. In the past three years the industry has grown from 10 companies to over 60, representing in 1949 an annual business of $4 million, mostly in sales to the A.E.C. and its contractors. But only some 20 firms produce complete instruments, and a handful dominate the business. Since a purchaser of radio-isotopes needs the necessary instruments for their handling, a single company usually handles both. Thus, Tracerlab, which is the largest commercial distributor of radioactive compounds, is also a leading producer of detection instruments and other equipment used in isotopic work. By 1950, its annual sales were in the neighborhood of one million dollars, and 40 percent of these went to the A.E.C.

This new business has great potentials, far beyond the limited horizons of isotope research and even the nuclear weapons industry in itself. A new field of lucrative profits is presented as "civilian defense" against atomic bombs. The more the atomocracy boasts of the weapons monopoly, the more alarmed does it become at the threat of an atomic war, generating a condition bordering on mass hysteria. Instead of a straightforward proposal for abolishing atomic weapons, fantastic "defense" schemes are suggested, among them a ten-year program financed by the government at the rate of $25 billion annually for the dispersal of cities and other measures.[12] As far-fetched as this may be, one of the immediate effects of the maniacal agitation for war is to open wide horizons for the atomic instrument business. Much attention has been directed to a type of standardized detection instrument which can be mass-produced for civilian use. "A Geiger in every room!" may soon become a familiar advertising slogan. The commercial laboratories are engaged in keen competition to turn out the perfect instrument.

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* In 1951, the A.E.C. signed contracts with Bendix Aviation Co. and Tracerlab, Inc., for studies looking toward the establishment of privately-financed nuclear reactors to produce radio-isotopes on a commercial basis.

† For example, California Research Corp., a subsidiary of Standard Oil of California, has carried on research, jointly with the isotope division, on the use of radioactive elements to measure wear on piston rings and machinery and as a control agent in refining processes.

9. Militarization of Science

ONE YEAR AFTER the end of World War II, in an article entitled "Science Dons a Uniform," a leading business journal declared "The odds are getting better all the time that pure scientific research will become, permanently, a branch of the military establishment."

At about the same time Philip Morrison, a progressive American physicist, was writing "science has not learned how to demobilize." Pointing to control by the military over nuclear physics, he warned that if this continues, "Science itself will have been bought by war, on the installment plan. . . . American science will appear to the world as the armorer of a new and more frightful war."[2]

These predictions from two widely diverse viewpoints are confirmed by the entire course of events. It has become the admitted aim of national policy to exploit science to the utmost for war. In summarizing recommendations for a government program in the field of science, the President's Scientific Research Board concluded in 1947 that the paramount contribution of science to the national interest arises from its military importance.[3] Thus was recorded, in an official judgment, the entry of science upon the stage of total militarization.

The New Stage

The leap in this direction was made during World War II. In the previous world war science, neglected at the beginning, became a minor though necessary auxiliary of the armed forces with the development of the airplane and radio. But in the second world war science became immediately important. It was a dominant factor in the development of new weapons and also in the co-ordination and direction of military operations. Scientists were brought directly into the military organizations or into other government agencies serving the armed forces. In the words of Vannevar Bush, "Scientists became full and responsible partners for the first time in the conduct of war."[4] About 30,000 scientists and engineers were on teams working on new weapons under the supervision of the Office of Scientific Research and Development (O.S.R.D.), the central wartime agency devoted to this purpose. According to the President's Scientific Research Board, "The laboratory became the first line of defense and the scientist, the indispensable warrior."[5]

A decade of militarization—beginning with preparations for World War II—has consolidated the new stage of science in the United States. A qualitative shift in the organization of science has occurred. In tracing the evolution of science in terms of its organizational forms, J. D. Bernal, the British scientist, points out that in the last century scientific activities carried on by individuals, with or without the aid of subsidies from wealthy patrons, were already vanishing. The "men of the garrets" gave way to the universities, where the main advances in science were concentrated and where research became a definite function of the teacher. But by the end of the nineteenth century the students trained in the universities were already beginning to carry on their research outside the academic institutions, in industry or government service. With the growth of monopoly, the industrial laboratory began to overshadow all other institutional forms of research.[6]

The first industrial laboratory was established in the United States by General Electric in 1900, but the rapid development of monopolized research did not begin until after the first World War. In the twenties the industrial laboratories began to outstrip all other research centers. During the decade before World War II industry accounted for over two-thirds of all research expenditures in the United States, while the government and the universities supplied the remainder, in about equal amounts. By 1946, industrial research laboratories in the United States numbered 2,500, employing 133,500 people, as against 300 laboratories with 9,300 employees in 1920.[7]

The prime purpose of industrial research is to apply the basic knowledge of science to the needs of production. But the industrial laboratories have also tended to go into basic research, especially in physics and chemistry, and to draw able research scientists into their work. The center of gravity of science moved more and more into the monopoly sphere, not only because many scientists left the universities for the industrial laboratories, but also because the monopolies extended their control over the universities.

Militarization set in after science was already firmly within the orbit of capitalist monopoly. Science is becoming highly militarized within the framework of monopoly control, and in the process the control of both basic and applied science is becoming more and more centralized.

During World War II, government financing of weapons research and development became the central channel for the militarization of science. Not counting the atom bomb, the government supplied about $500 million annually for research and development, while industry spent only $80 million a year for this purpose. In terms of financing, industry's share of the national research budget fell to 13 percent, while the universities together with private research institutions accounted for only 4 percent.[8] If the $2 billion spent on the atom bomb were to be included, the government share would account for 90 per cent of all research expenditures.

At the end of World War II, a wave of expansion began in the private research field. General Electric, General Motors, the Bell system, du Pont, Westinghouse, and the big oil corporations, which for some time had dominated the field of applied research and had also taken over many of the functions of basic research, extended their laboratory work. These and other corporations again invested heavily in research, to exploit wartime inventions for their own purposes, to maintain their commanding patent positions, and to enter well prepared into military work. While the corporations' share of research financing increased, the importance of government-financed research devoted almost exclusively to weapons continued into the postwar era. New military preparations sent total research expenditures even higher than during the war. In 1947, the total spent from all sources for research (excluding atomic energy) reached $1.2 billion, almost twice the average annual expenditure of the war years. Of this amount the government supplied 54 percent, industry 39 percent, and the universities only 4 percent. As a result of a decade of militarization, the government had replaced the private corporations as the principal source of research funds.

In that year the War and Navy Departments alone accounted for $500 million or four-fifths of all government research expenditures. However, the portion of national research funds expended on weapons was even greater than indicated by these comparisons. The report of the President's Scientific Research Board, from which these data are taken, did not include expenditures for the atom bomb, and no information is available for that year on the allocation of A.E.C. funds to research and development as contrasted to the operation of the atomic enterprise. But later data indicate that the A.E.C. outlay for research

facilities and experimentation was $128 million in 1949 and $157 million in 1950, not including an added $260 million for the development of the hydrogen weapon.

Furthermore, funds allocated by the corporations and the universities for research were increasingly devoted to the construction of facilities useful for weapons development. The portion of the total research program devoted to military purposes is therefore much greater than the government share of the science budget. Moreover, since that year, the outlay for weapons research by government and corporations alike has greatly increased, keeping pace with the acceleration of military mobilization.

The President's Scientific Research Board established the principle that weapons research must be kept at very high levels, and anticipated a constant increase of appropriations by the government for this purpose reaching over $1 billion annually by 1957, in addition to the work on atomic weapons. But by 1951 this goal had already been exceeded. In the fiscal year 1950-51, over $1 billion was to be spent for weapons research by the armed services, and over $2 billion was budgeted for all A.E.C. operations, including research. Investment in research by the private corporations was estimated at about $1 billion.

The militarization of science has far-reaching and detrimental repercussions upon the health of the people, basic research, higher education in general, and the social organization of the nation. As the energies of science are turned to weapons, they must be diverted from the social needs of the people; that is, from the fundamental aim of science. This is reflected in the great disparity between research funds allotted to medicine and to weapons. Expenditures for weapons research amounted to about $600 for each life lost in World War II. But funds for research in heart disease are equivalent to 17 cents to each death from that cause; in kidney disease to 38 cents per death; in cancer to $2.15 per death. The present trend is increasing the disparity. Despite the early hopes held for the treatment of cancer and other diseases by the products of the atomic pile, only an infinitesimal portion of atomic research funds are devoted to such purposes. Instead, large funds are spent on experiments in radiological and biological warfare.

Demise of Basic Research

Systematic neglect of basic research that does not contribute directly to weapons undermines and distorts the entire scientific potential of the nation, with possibly disastrous effects not only upon the health of the people but upon economic development and education in general. This is especially serious because of the redistribution of world scientific resources as a result of World War II.

Less than 10 percent of all current research funds are devoted to basic as distinguished from applied research. The old weakness of American science is thus accentuated by the war program. During the past three decades when the major research programs were concentrated in the industrial laboratories, science has been increasingly devoted to the techniques of production, while most of our basic scientific information has been imported from abroad and, to a growing degree, through the international cartel system. The practicality of American science and the neglect of basic research have become proverbial. Most of the important scientific discoveries of recent years were made abroad, including atomic fission, the basic steps leading to radio and radar, sulfa drugs, D.D.T., penicillin, and the blood bank.

As a result of a decade of uninterrupted emphasis upon weapons the stronghold of basic research in the universities is diverted to the military program, while government-financed research, previously midway between basic and applied science, has turned sharply to the practical side. Even the 10 percent of the total fund earmarked for basic work is not a true measure of the extent of fundamental research. A great part of this is given to the construction and maintenance of the huge machines of modern research, which are devoted mostly to programs closely related to weapons development. Many of the basic projects are dependent for their continuation upon demonstrating at an early date their ultimate military usefulness. As during World War II, when basic research and the training of new scientists were seriously neglected, fundamental work in science is again the victim of the military program, in character as well as in extent.

Nowhere is the stifling of basic research better demonstrated than in the field of nuclear physics. The A.E.C. commands the principal facilities and resources for scientific work in this field. Yet no less an authority than Lee A. DuBridge, president of the California Institute of Technology and chairman of the research planning group of the A.E.C. General Advisory Committee, had to acknowledge in public hearings before the Joint Congressional Committee that the A.E.C. finds it impossible to fulfill its responsibilities for basic research because of the prior claim of weapons.[9]

Obviously, no formal or artificial barrier should separate basic and applied research. They react constantly upon each other and together constitute the integrated body of science. If the United States was successful in technological development, this was possible only because of the international division of labor, as the result of which the United States could draw heavily upon the accumulation of scientific knowledge in the world, and make its own significant contribution in the sphere of practical application. But the old conditions which made this possible were altered by World War II.

The old scientific centers of capitalist Europe, which served as the source of basic science for the American industrial laboratories, have been seriously depleted in both resources and personnel. The position in England remains somewhat better, but by and large basic science has deteriorated at its very core as a result of two decades of fascism and war, and their aftermath. The imprisonment of science began a decade earlier in Germany than in the United States, with the result that German science was completely corrupted by the time the war ended. After Hitler's coming to power, many of the best German scientists sought refuge abroad, and today they are among the leading scientists of England, the United States, and other countries. Prominent scientists in countries overrun by Hitler also found permanent abode elsewhere. Organized research had thus been either disrupted or completely subverted to the fascist war program by the time of Germany's defeat.

Toward the end of the war in Europe, the United States began a scramble for scientists in Germany, not unlike the rush for uranium and other strategic resources. The German military scientists became valuable commodities in the economy, whether for industrial research or for war—cold or hot. When the Soviet armies defeated the main concentration of German troops, the American military authorities began secretly to grab out of the zone the Russians were to occupy as many Nazi scientists as they could find. This also took place in the western zones, under the very eyes of the British and the French. A leader of one of these foraging expeditions tells how he was instructed to promise American citizenship to the scientists without regard to their political views, and most of them were Nazis.[10]

By October 1946, according to a Reuters news dispatch, 2,400 German scientists had been taken to the American zone. An American Military Government official admitted that by then 300 had already gone to the United States, and that 1,000 more would finally be sent.

Eventually becoming American citizens, without the benefit of "loyalty" purges, these Nazified military scientists were put to work for the Air Force and the Army, and for private firms and universities engaged in weapons research under contract with the munitions agencies. Similar "booty" was taken in Italy and Japan, but on a minor scale.

These attempts to round up science and scientists from abroad were continued in other forms. A plan for global "scientific intelligence" was presented in June 1950 by a special committee appointed by the Secretary of State to make recommendations on science and foreign relations.* According to this scheme, an elaborate system of intelligence is to be set up, headed by a Science Office in the State Department, and served by trained attachés in the American embassies in Paris, Rome, Berne, Stockholm, Ottawa, Lima, Oslo, The Hague, and Brussels, as well as in the occupation headquarters in Bonn and Tokyo. Special area offices are to be established for Western Europe, South Africa, South America, and Australasia.

Adorned with generalities about the value of scientific interchange among nations, the scheme in bare essence is systematic scientific espionage, calculated to capture world science for the American monopolies and the military machine. It speaks glibly of "free access" to scientific thought everywhere, just as the American trade program stresses "free access" to the raw materials and markets of the world. But it has already been determined that "free access" is to operate along a one-way street, since practically all vital scientific information developed in this country is under a "security" padlock. The plan expresses interest in a broad field, extending into all branches of industry as well as basic science, in order to keep American researchers "currently aware of the latest advances of modern technology, in whatever nation they may occur."[11]

These primitive efforts to bridge the gap between American technology and basic science by the importation of scientists and by espionage accentuate the unbalanced distribution of science and its isolation. Research capital in terms of costly apparatus, scientific workers, and financial resources is now heavily concentrated in the United States, while possibilities in other capitalist countries are further depressed. This accumulation of scientific capital in the new center of militarized research imparts to the entire scientific world of the "Atlantic Community" the corruption arising from the purchase of science by the American monopolies and from the prostitution of science to the service of war. Basic science as a whole has deteriorated, for it is exposed to the infection which radiates from the cartelization and militarization of research in the United States. The stimulus for fundamental scientific progress—working for social aims, for life not death—is being smothered.

A high barrier surrounds the new research center of the capitalist world, imprisoning science cartel-fashion on a vast scale. Science is isolated behind this barrier, created by atomic diplomacy and new war preparations. It finds itself artificially separated into new categories which have no relation to science, the "classified" and the "unclassified," the highly secret, medium secret, or just plain secret, and the non-secret, which now represents a pitifully small and mutilated sector of the recent accumulation of exact knowledge. The perfect weapon of mass annihilation has become the goal of science thus isolated and crippled. Deprived of its soul, science is imbued with chauvinism, the most anti-scientific of all ideologies, the inevitable illusion where reason fails that anything American is by its very nature supreme. Every device, no matter how evil and disruptive of science, is used to quarantine science behind this barrier, to prevent contact with scientists in other countries, especially in the Soviet Union.

The President's Board states with some trepidation that "for the first time in our history, we are on our own as far as the extension of knowledge is concerned." Moreover, as the Board acknowledges, the United States, deprived of the old sources of basic science, must face a new type of competition. While the scientific centers of western Europe are in decline and science in the United States is isolated within a security barracks, science organized on a planned and social basis in the Soviet Union is progressing. The President's advisers cite with alarm the appropriations for research in the Soviet national budget—$1.2 billion in 1947 and $900 million in 1946, in both years equivalent to the funds appropriated for this purpose from all sources, state and private, in the United States. They also point to the Soviet program for training 140,000 scientists and engineers a year.[12] Nor do these comparisons allow for qualitative differences, such as the greater emphasis in the Soviet endeavor upon fundamental science, the more balanced relationship between basic and applied research, and the social utilization of science in all respects.

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* The plan was prepared by Lloyd V. Berkner, who was the Co-ordinator of Military Assistance and the first executive secretary of the armed forces Research and Development Board. He had previously made a similar study for the late Secretary of Defense, James Forrestal.

Many scientists and educators express alarm over the smothering of basic research in the United States, and the isolation of American science as a result of national policy. The United States cannot stand on its own feet scientifically when science is transformed into an auxiliary of military planning and is completely cartelized by the trusts. Thus the crisis of science in the capitalist world is deepened.

Military Guidance

Little can be done to overcome the scientific lag of the United States when the power to direct research is enjoyed by the military and munitions agencies. The A.E.C. and the Research and Development Board of the National Military Establishment now dominate science in the United States. While the A.E.C., with the help of the Office of Naval Research, controls practically the entire field of nuclear physics, the Research and Development Board reaches out into many other fields. Established in 1947 to co-ordinate the weapons research of all military departments, the Board commands four-fifths of all government funds appropriated for research outside the atomic energy field. Its power extends beyond the military services, for it is empowered to advise on all research relating to national security and to formulate policies for the armed services involving non-military agencies. As already shown, an agency of the Board, the Military Liaison Committee, controls atomic munitions as well. The influence of the military extends into all organized forms of scientific endeavor.

Among the major effects of the centralized military direction of science is the increasing concentration of research in the laboratories of the largest corporations. Before World War II, practically all government research funds were allocated to state-owned laboratories or institutions. But during the war, the system of contracting out research to non-governmental bodies became the general practice of the O.S.R.D. under Vannevar Bush and of the munitions agencies. This distinctly military system is employed extensively today by the A.E.C. and the armed services. It operates on the same principles as other government contracts for materials and production.

In weapons research generally, the contracts are highly concentrated among the top trusts. Ten of the largest contractors held 65 percent of all Army and Navy research and development contracts in 1947. The same six firms are to be found on both the Army and Navy lists of the ten largest contractors. This means that the bulk of government-financed research is carried out in the big corporation laboratories. Thus, out of $625 million spent by the government on research in 1947 (excluding the A.E.C.), more than two-thirds was allotted to industrial and university laboratories, the latter receiving only a very small portion. Since these funds comprise the major part of national research expenditures, this amounts to the effective militarization of science under the trusts.

Corporation laboratories control the largest sector of scientific manpower. In 1947, about 137,000 persons were engaged in scientific research, technical development, and the teaching of science. Of these, 42 percent were in the industrial research laboratories, 36 percent in the universities, mostly in teaching, and 22 percent were in government employ. During recent years the government share has been stable, but the command of scientific manpower by the monopolies has grown at the expense of the universities. The latter's share fell from 49 percent in 1930 to 36 percent in 1947, with the result that basic research and the preparation of new scientific personnel suffered. The tendency toward depletion of the universities in favor of the industrial laboratories was accelerated by World War II, and is encouraged today by the continuing high level of military preparations. As a result, the quality of science teaching in the universities has deteriorated to such an extent that official bodies express grave concern lest the supply of qualified scientific workers cannot be maintained.[18]

Militarization of science has strengthened the corporate monopoly of scientific capital—command of research facilities, scientists, and finance (whether supplied directly by the trusts or in the form of government contracts).

Machine Shops for Research

Expensive facilities are a constantly growing factor in modern research. Science itself has become big, in the sense that its organization is more complex and involves very large capital expenditures for cyclotrons and other elaborate machines. Large secondary staffs are necessary to service the apparatus. World War II accelerated the trend toward the organization of huge central laboratories. Research plants with hundreds and even thousands of employees were established for the development of radar, proximity fuses, nuclear energy, and other innovations useful to war. These large science machine shops were applied physics laboratories rather than basic research institutions. The basic research has become more and more dependent upon these highly capitalized central laboratories, where the equipment essential for experimentation is concentrated, supported mostly by government funds distributed by the munitions agencies. "Pure" science, on the surface unrelated to weapons, has thus become dependent upon the military.

Today nuclear physics is the pivot of scientific advance in general. It may be called the heart science around which other exact sciences tend to revolve. Especially chemistry, mathematics, metallurgy, biology and medicine are now largely dependent upon physics for their further development. With control of research facilities in this field centered in the A.E.C., this munitions monopoly influences many areas of science, both basic and applied. While some industrial laboratories and universities have nuclear accelerators of their own, the most powerful and effective machines are the property of the A.E.C., as are the only reactors available for experiments.*

In 1950 the total research budget of the A.E.C., before the additional $260 million was appropriated for the hydrogen bomb, stood at $157 million, about equally divided between capital expenditures for apparatus and the current operation of research. In the reactor development program $41 million was allocated for equipment and $[illegible] million for research operations; in the physical sciences $25 million for apparatus and $31 million for research; and in biology and medicine $10 million for apparatus and $17 million for research. About half the capital expenditure was for reactors and accelerators of various types. These combined programs involved a scientific and technical staff of 5,400 people, the largest research undertaking under a single direction. [14]

While a growing proportion of this work is contracted out to private firms (in the physical sciences alone reaching about one-third of the appropriation in 1950), the bulk of the work is concentrated in the National Laboratories of the A.E.C.

Government-owned laboratories have existed for some time, but these A.E.C. research centers are a new departure in their scope, their monopoly of nuclear physics, and their organizational function in the total militarization of science.

The national laboratories of the A.E.C. meet the basic requirements of a military program. Complete secrecy of scientific research can be imposed. Available here are the huge capital equipment and staffs which are needed for significant work in nuclear physics. In these central laboratories work can be effectively subordinated to the weapons program by directives from above. It is also possible to muster leading specialists in a variety of fields, on a scale that a single private institution would find difficult if not impossible. In these large research machine shops a military discipline can be imposed upon the scientist, not only in his research but also in his politics and way of life. The value of the national laboratories to the atom bomb business was well expressed by Henry D. Smyth, nuclear physicist and Atomic Commissioner, when he told a scientific gathering at Oak Ridge:

"To summarize, the A.E.C. needs the national laboratories because it needs secrecy and *big groups of scientists who will take orders,* and big equipment."[15]

As in the other installations of the government-owned atomic industry, the national laboratories are operated by non-governmental bodies under contract with the A.E.C. Five of these are run by the corporations already participating in the atomic industry. Union Carbide runs the Oak Ridge National Laboratory, as part of its command of the enriched-uranium phase of the industry. General Electric is in charge of the Knolls Atomic Power Laboratory, which was recently diverted to work on submarine reactors. A specially formed affiliate of the Bell Telephone monopoly runs the weapons laboratory at Sandia. Westinghouse manages the submarine propulsion laboratory at Pittsburgh. Monsanto Chemical Co. has the newly-constructed Mound Laboratory at Dayton, Ohio. In these centers control of nuclear research by the corporations through the medium of government ownership is complete.

However, the most important nuclear research centers are to be found among the national laboratories of the A.E.C. that are managed by universities. These constitute one of the central channels for the militarization of research in the institutions of higher learning.

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* It was not until October 1950 that the first non-A.E.C. research reactor was authorized, when Consolidated University of North Carolina was granted permission to construct a low-powered reactor, using nuclear fuel loaned by the A.E.C. Burlington Mills Corp., a leading exploiter of southern textile workers, granted $200,000 from its philanthropic fund to the university for the construction of the building in which the reactor was to be housed.

10. Atomics on the Campus

IN A VARIETY of ways research and training in the universities and scientific institutes are co-ordinated with the weapons program. Science is becoming militarized at its very source—at the academic strongholds of basic research, where the new scientific personnel is also trained. The big universities are now participating in the military program, both as the research centers and as administrators of the weapons laboratories.

Control of our institutions of higher learning by monopoly, especially in the scientific and technical fields, is an old story. It is a process which follows the general trends of monopoly capital—the ever greater concentration of economic power, the integration of monopoly and the state, and now the militarization of the monopoly state as a whole. During the past decade university science has been harnessed to the military program so firmly that research and training for peacetime pursuits have become secondary. In this respect, the control of research and scientific training by the A.E.C. and the military agencies plays the key role.

A.E.C. as Co-ordinator

The national laboratories of the A.E.C. are the principal co-ordinating centers of university research in the physical sciences—nuclear physics, chemistry, mathematics, and metallurgy—and play a leading role in biology and medicine. The universities have been brought into these nuclear weapons laboratories in the role of administrators. There is not a single important scientific institution which does not participate, either in research or in management.

As administrators of A.E.C. laboratories, the universities have become organizers of militarized science. Argonne National Laboratory at Chicago, the Radiation Laboratory at Berkeley, and the Los Alamos National Laboratory in New Mexico—the most important research and development centers of the nuclear weapons business—are managed by universities. A consortium of universities runs the Brookhaven National Laboratory on Long Island, which is oriented somewhat more than others toward basic research in nuclear physics. Universities manage the two major biological and medical laboratories of the A.E.C. Iowa State College runs the Ames National Laboratory, which participates in some phases of metallurgical research as well as in a minor program concerned with the application of atomics to agriculture. Universities also take part in some of the national laboratories managed by the industrial corporations.

The Radiation Laboratory at Berkeley, which is managed by the University of California, is among the most important basic nuclear research centers in the country. Already the largest single university installation for nuclear physics before World War II, it was converted by the A.E.C. into a huge science machine shop, specializing in the study of nuclear reactions and of cosmic and other atomic particles. The concentration of enormous research power* at the A.E.C.-controlled Radiation Laboratory, with the capacity to handle nuclear experiments requiring billions of electron volts, assures the diversion of this important research center to the military program.

The close connection between basic research at the Radiation Laboratory and nuclear weapons is emphasized by the role of the University of California as the manager of the Los Alamos National Laboratory, said to be the best-equipped physics research center in the country. Since its foundation under the Manhattan District during the war, this laboratory has been the center of weapons research; it also served as the assembly point for the first atomic bombs. While nearby Sandia has taken over the latter function and also handles some aspects of weapons research, Los Alamos remains the central point for research on atomic weapons, including the hydrogen bomb. Obviously, this work is intimately related to research on atomic particles at the Radiation Laboratory.

The University of California is also a leading participant in the biological and medical research program of the A.E.C. At Los Angeles it operates one of the two major laboratories of the A.E.C. in this field, the other being under the direction of the University of Rochester. Work in biology and medicine as they relate to atomics also proceeds at Berkeley. How much of the program in biology and medicine is directly related to the use of radioactive substances for poison warfare is not known. That such work is proceeding was admitted by the A.E.C. for the first time in its Eighth Semiannual Report, which contains one cryptic sentence on the subject: "Studies on the feasibility of radiological substances as a method of warfare were continued."[1] The second semiannual report of Defense Secretary Louis Johnson spoke at greater length of radiological warfare, indicating serious work along these lines by the military.

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* In addition to the older 184-inch synchro-cyclotron, the Radiation Laboratory will be the site for the 5-7 Bev (a Bev equals one billion electron volts) accelerator now being built, said to be the most powerful machine of its type. A one-quarter scale model of this monster machine is already in operation. It also has a 300 Mev (a Mev equals one million electron volts) synchroton, a Van de Graaf accelerator, as well as other machines and supporting apparatus.

As far back as 1945, in his official report on the atomic bomb project, Henry D. Smyth mentioned the possible use in warfare of the poisonous fission products of nuclear reactors.[2] It has been estimated that the existing reactors at Hanford produce, as a by-product of plutonium, enough radioactive poison each month to contaminate 144 square miles with a dose powerful enough to kill all people remaining in the area—an area equivalent to six metropolitan districts the size of New York.[3] In any case, that part of the research program included under the head of biology and medicine which is not devoted to experiments with "death sands," is concerned largely with the radiological effects on human beings of atomic explosives and fission substances.

While the University of California holds the prime place in basic research related to nuclear weapons, the University of Chicago runs the most important production development center of the atom bomb business. Most of the work on reactors, the prime machine for the making of nuclear explosives, is centered at the Argonne National Laboratory. The University of Chicago was involved in this work from the beginning as the manager of the Metallurgical Laboratory where the initial work on reactors under the Manhattan District was mainly located. The University continued as manager when the wartime laboratory was reorganized and enlarged into the present Argonne National Laboratory. Argonne is the directing center for the research and development reactor program in general, including the work at the new testing grounds at Arco. Complementing its administration of Argonne, the University of Chicago, in co-operation with leading industrial corporations, has established its own institutes for nuclear and related research, about which more will be said.

Other leading universities and research institutions have been drawn into the central A.E.C. laboratories. Thus, the participating institutions at Argonne comprise 31 leading universities and institutes of the Midwest, including the Battelle Memorial Institute (the largest industrial laboratory in the country), as well as the Mayo Foundation, and the Carnegie, Case, and Illinois Institutes of Technology. Another leading engineering school, the California Institute of Technology, participates in the work of the Radiation Laboratory at Berkeley.

A new device has been fashioned, the specially created university corporation, to permit groups of institutions to manage other A.E.C. laboratories and training centers. Brookhaven National Laboratory is run by Associated Universities, Inc., a special body set up for this purpose by nine large Eastern universities—Columbia, Harvard, Massachusetts Institute of Technology, University of Rochester, Cornell, Johns Hopkins, Princeton, University of Pennsylvania, and Yale. Although most of these institutions now have some research machines, their work in nuclear physics tends to center around the giant cosmotron and experimental reactor, with elaborate supplementary apparatus, at Brookhaven.

A similar organizational device is used to bring 24 southern universities into the Oak Ridge Institute of Nuclear Studies, which is attached to the national laboratory run by Union Carbide. The principal work of this institute is to train the younger generation of scientists and technicians for work in the atomic industry. It also administers the fellowship program of the A.E.C., and runs the Oak Ridge School of Reactor Technology for engineers from industrial firms and for recent college graduates who will be employed in the atomic enterprise.

Participation of the leading institutes of higher learning as managers and researchers in the national laboratories is adapted to the organization of science for military purposes. Group participation corresponds to the high capitalization of research equipment, and at the same time meets the requirements of centrally-dominated research and training for weapons development. Through this form of organization the universities are mobilized wholesale for the war program.

Whether operated by the universities or by industrial contractors, the national laboratories serve as the common meeting ground for the academic and corporation scientists, and the military. The staffs are recruited from both industry and the universities; and participating organizations in the national laboratories and A.E.C. research projects include industrial companies as well as colleges. An example of the latter is the secret research project in the San Francisco Bay area, announced by the A.E.C. in March 1950. Involving the construction of a new particle accelerator, the project is undertaken by the California Research & Development Co.* (a subsidiary of Standard Oil of California) in cooperation with the Radiation Laboratory and the Navy Department.[4]

Just as a university lends leading professors to A.E.C. laboratories the corporations also donate their chief technicians and engineers. Westinghouse, for example, grants leaves of absence to some two score scientists employed in its own laboratories for work at Argonne, while at the Oak Ridge National Laboratory a score of industrial corporations participate through their scientists and research workers. Under the impetus of the military program, the old trend toward merging academic research into the science programs of the big trusts is thus accentuated, and also institutionalized, in these new national research centers.

The new organization of the physical sciences around the core of the militarized national laboratories leads to even greater emphasis upon experimental and practical research. This arises from the very nature of the work—the orientation of research to the perfection of weapons and of processes connected with weapons. In 1949 there were 9,000 scientists and technicians on the staffs of the national laboratories and on the A.E.C. research projects in various non-government laboratories, as compared with 7,000 in the Manhattan District during the height of the wartime project. The mobilization of scientists in the service of the new munitions industry is thus greater than during World War II. In addition, the proportion of engineers on the staffs increased from 30 percent under the Manhattan District to 45 percent under the A.E.C., an indication of the increasing emphasis upon applied research.[5] The militarization of science, and especially of the physical sciences, thus accentuates the traditional weakness of research in the United States, at a time when the older scientific centers of western Europe, which in the past supplied this country with basic science are depleted of both resources and personnel.

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* In March 1951, it was announced that this company received an A.E.C. contract for the design, engineering, and management of a new secret facility on the site of the Ordnance Works at Weldon Springs, Mo.

Physics in Uniform

That part of university and institute research which is not brought directly under the supervision of the national laboratories is becoming more and more dependent upon government research contracts, grants, and fellowships, extended mostly in connection with weapons development.

According to a survey made by the *New York Times*,[6] the federal government was scheduled to give 200 institutions of learning more than $100 million for all research purposes in the social and physical sciences during the academic year of 1949-50. It was found that the major part of these funds were to come from the Department of Defense and the A.E.C., and that they were to be concentrated for the most part in the big universities and technological institutes. Out of 200 institutions receiving government research funds, nine universities accounted for one-fifth of the total amount. Many universities reported that the bulk of their research is financed by the government, that is, primarily by the military and weapons agencies.

Of the armed services, the Navy maintains the closest contact with the universities and scientific institutes. It was quick to follow up the wartime mobilization of science. Just before the end of the war it set up the Office of Research and Inventions which was reorganized in 1946 into the permanent Office of Naval Research. As the O.S.R.D. released the universities from their war contracts, the Office of Naval Research stepped in with new contracts, thus continuing the academic research in fields essential to weapons development. The Navy professes interest in basic research, but it is naturally looking primarily for military application. Thus, during the first year of the Office of Naval Research, 40 percent of its contracts were in nuclear physics, which is now the supreme military science, while 14 percent were in electronics, and 10 percent in guided missiles.

The college research program of the Office of Naval Research consists of some 1,200 projects in 200 institutions, at an annual subsidy of about $20 million. Nearly 3,000 scientists and 2,500 graduate students are involved in research work under the supervision of the O.N.R. Even more important in subsidizing university research is the A.E.C., which directly allots over $10 million annually for contracts in the physical sciences, exclusive of the research carried on in the national laboratories. In addition, the A.E.C., jointly with the Office of Naval Research, supports contracts, mostly with universities, totaling $9.4 million in the physical sciences; under its own direct supports contracts in biology and medicine totaling $7.8 million, as well as $[illegible] million in joint projects with the Navy.[7] Projects entirely financed by the A.E.C. operate in 150 universities and technological institutions and involve 1,000 research persons. Large research funds are also supplied by other military departments, especially the Air Force and the Air Materiel Command.

Of all the sciences nuclear physics is perhaps the most completely dominated by the war agencies. The A.E.C. and the Office of Naval Research between them can be said to own nuclear physics in the United States. These agencies jointly control the vital work in this field which is not already encompassed by the national laboratories. At the beginning of 1950, the A.E.C. listed 71 unclassified (non-secret) research projects in physics, of which 58 were operated jointly with the Office of Naval Research. Most of these involved work on the indispensable machines of present-day research, the cyclotrons, synchrotons, bevatrons and accelerators of various kinds.*

Practically all machines of basic research, whether located in the national laboratories or in non-government institutions, are either owned or financed for contract work by the A.E.C. and the Navy. These supported the construction of powerful atom-smashers for the University of Chicago, Columbia, Stanford, Cornell, University of Rochester, and the Carnegie Institute of Technology, as well as smaller machines in a dozen other institutions. The A.E.C. also began cooperation in 1950 with North American Aviation, Inc., and the University of North Carolina in preliminary plans for construction of low-power research reactors for the use of these organizations.[8] The military agencies help finance the operation of these machines by granting research contracts involving their use, thus co-ordinating the work at these centers with the needs of the new munitions industry.

The A.E.C. and the military agencies also maintain extensive research programs in other physical sciences—especially chemistry, mathematics, and metallurgy. As with nuclear physics, the full extent of the program is not known, since the majority of research contracts may be in secret work on weapons and therefore unpublicized. Of the other sciences now being brought under military control the most important are biology and medicine. Thus in 1950 the A.E.C. maintained 194 contracts in these fields at 87 universities, hospitals and private research centers. These were devoted mostly to the biological effects of radiation, which have a direct bearing upon measuring the killing power of atomic weapons, as well as supplying data which may prove valuable to the development of radiological warfare. Medical and cancer research are included as minor elements in the program, while work on radio-isotope tracers for industrial purposes is also limited.[9]

Through the fellowship programs the military agencies seek to muster the most promising science students in the universities. Since the largest fellowship funds are at the disposal of the A.E.C. and other war agencies, students who wish to pursue their scientific studies after completing preliminary courses at the universities are becoming more and more dependent upon the military. For the academic year 1950-51, the A.E.C. allotted $1.5 million to maintain 500 fellowships in the physical and biological sciences at universities, hospitals, and research institutes.[10]

Accepting an A.E.C. or military-sponsored fellowship means in essence to become a weapons scientist and to accept as a requirement for a doctorate complete political subservience to the war program. In 1949, under the impetus of accelerated war preparations, the A.E.C. revised its fellowship program to bind participants more firmly to the aims of the nuclear weapons industry. Fellowships in fields directly involving secret weapons were already subject to complete thought control. Policing of the minds of A.E.C. fellows was now extended to all fields, even to work removed from atomic weapons. Applicants are required to undergo an F.B.I. investigation for "loyalty" and to receive security clearance from the A.E.C. The dossier rather than the student's ability is the test for a doctorate. Even the National Academy of Science and its National Research Council, which until then had administered the A.E.C. fellowship program, refused to accept responsibility for it under the new requirements, and would assume an advisory function only in the secret weapons field, where it considered strict "loyalty" as interpreted by the military a justified condition.

At the same time, the A.E.C. revised its pre-doctoral program in the physical sciences into what amounts to a training course for atomic-war technicians. In its own words, "The subject of research must be sufficiently closely related to atomic energy to justify a presumption that the candidate, upon completion of his studies, will be especially suited for employment by the A.E.C. or one of its contractors."[11] This applies also to the biological sciences, where fellowships are limited to "experimental aspects related to atomic energy . . . such as the physiological and toxicological effects of fission products and the development of radiation instruments as applied to biological and health physics problems of a *classified nature*."[12] [Emphasis mine—J.S.A.]

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* According to an authoritative account, by mid-1948 there were 25 cyclotrons, 10 synchrotons, 8 electrostatic generators, 15 bevatrons, and 6 linear accelerators in operation or under construction, together with elaborate supporting apparatus. (W. E. Shoupp, *Electrical Engineering,* July 1948.)

As in the atom bomb business as a whole, the A.E.C. fellowships are concentrated in a few leading institutions which are already well integrated into the munitions program. Out of 314 pre-doctoral fellowships in force at the beginning of 1950, about half were at seven institutions—Massachusetts Institute of Technology and the universities of California, Chicago, Columbia, Harvard, Illinois, and Rochester. In addition some 90 post-doctoral fellowships in advanced physical, biological, and medical research were also placed in the big institutions, of which the universities of California and Chicago are the most prominent.[13]

Woe to the university accepting research contracts from the military services or the A.E.C.! Their staffs and fellows are immediately submitted to the same thought control and F.B.I. surveillance which permeate the entire atom bomb business, even if their tasks have no direct connection with weapons. Once this virus is implanted on the campus, it begins to infect the entire body of academic freedoms. At the University of California, for example, all teachers in every department were required on pain of being dismissed to sign a "loyalty" oath and a special sworn statement affirming they were never Communists —a designation increasingly applied to anyone with progressive ideas.

Control by the A.E.C. and the military departments of basic apparatus, with large funds for contract research and fellowship programs, affects the scientific potential as a whole, and especially the source of scientific training at the universities. An entire generation of young scientists is being raised for weapons research, in the atmosphere of a police barracks.

The University as Big Business

Militarization of the universities, as of science in general, takes place on the foundation of established monopoly control. The leading institutions of higher learning, whose scientific work is brought within the orbit of the weapons program, have served big business faithfully not only in the general ideological field but as supplementary research centers of the corporations and as the source of scientific and business personnel. The integration of higher learning and big business, especially in the scientific and technological spheres, has been a component part of the trustification of the economy. Militarization places the university laboratories and scientists even more completely at the service of monopoly, and undermines the very foundations of scientific progress.

In general, big business maintains control of higher learning through endowment funds, grants, and management of university investments, and, of course, through the administrators and boards of trustees.

A recent study[14] of 30 leading universities, many of them beneficiaries of the military research grants, revealed that two-thirds of the trustees are directors of industrial and financial corporations, including the largest in the country. The situation varies little as between private and state-owned institutions. In both groups, the bigger the university, the greater is the proportion of corporation men among the trustees and the bigger are the corporations they represent. Bankers predominate, making up 46 percent of all trustees, while only 5 percent are educators. Representatives of big business are most numerous on the boards of universities specializing in the physical sciences and engineering. And this is particularly true of the institutions playing a leading role in the atom bomb business. For example, 84 percent of the trustees of M.I.T., 83 percent of the trustees of the University of Chicago, and 70 percent of the University of California (state-owned) hold major offices or directorships in banks and corporations.

The 30 universities covered by this study dominate the field of higher education, including academic scientific research and the training of scientists. They account for half of all university graduates, 77 percent of all doctors' degrees, and half of all organized academic research. Control of these institutions by monopoly assures the direction of higher education and science in the country as a whole, even if big business and regional monopoly groups did not directly control the smaller colleges as well.

These big institutions are integrated into the monopoly economy, not only by their financial dependence upon the "philanthropy" of the wealthy families but also as big business ventures in their own right. On the eve of the war, according to the President's Commission on Higher Education, the universities and colleges had endowments and other capital funds of almost $2 billion, supplying an income of $70 million annually from investment in business undertakings outside the academic sphere. More than two-thirds of these capital funds were concentrated in only 46 of the 1,000 privately-owned institutions of higher learning.[15]

Since World War II, the trend toward big business among the universities has grown. A study by the American Council on Education shows that by 1947 the endowment funds had reached $2.5 billion, supplying a business profit from non-academic enterprises of $150 million annually. About 40 percent of these capital funds are invested in operating businesses or real estate, from which profits of [illegible] million annually have been realized. However, the most important sources of business income are in applied research carried out under contract with the industrial corporations, and technical services to business organizations, together amounting to an annual net profit of $92 million. It was found that 455 colleges and universities owned or operated enterprises for profit outside the academic field.[16] Commenting on this situation *Business Week* said:

"In the last few years the schools have come to look more and more like corporate holding companies. . . . Much of the college news now belongs more on the business-financial pages than in the educational columns."[17]

In addition to non-academic business enterprises, universities also appear as the administrators of huge government funds for weapons development, especially in the atom bomb business. During [illegible] the University of California, in its capacity as manager of the A.E.C. Radiation Laboratory and of Los Alamos, administered funds totaling $44 million. At the Argonne National Laboratory the University of Chicago managed a yearly budget of $35 million, and the Associated Universities running Brookhaven had $16 million in A.E.C. funds at their disposal.

In truth, some of the leading universities should be listed among the top corporations, ranking among the 100 giant trusts in terms of capital assets and profits from business undertakings. The corporation running Harvard, for example, has assets of over $300 million, two-thirds of which represent investment in stocks, bonds, and real estate, giving annual return of about $29 million. These investments are managed by one of the leading New England banking houses, State Street Investment Corp., whose president, Paul C. Cabot, is a director of J. P. Morgan & Co. and also serves as treasurer of Harvard Corp. Columbia University, whose board of trustees is heavily staffed by directors of Chase National Bank and National City Bank of New York, has total assets of about $138 million, over 60 percent of which is invested in securities and real estate, Columbia's investment in Rockefeller Center, New York City, alone being valued at $28 million. It is entirely consistent with these circumstances that James B. Conant, a top organizer of militarized science, should serve as the president of Harvard, while General Dwight D. Eisenhower, who continued as a chief adviser at the Pentagon, should have become president of Columbia.

We have seen that about 60 percent of the profits from business enterprises of universities is derived from applied research and technical services for corporations. In fact, the paramount trend in the higher institutions carrying on scientific research is toward ever greater dependence upon the monopolies, and resulting subordination of their laboratories and scientific training to the needs of industry and the military. General endowments and private gifts failing to keep up with the increased costs of education, the universities now seek more and more to supplement their income by accepting industrial and military research contracts at the expense of basic work. Thus big capital extends its sway over science not only in the industrial laboratory, which had already become the major center of organized research, but also in the university. This is part of the long-range tendency of monopoly to buy up science and cartelize it, a tendency which has been greatly accelerated by World War II and the preparations for new wars. It can now be said without exaggeration that university research is owned jointly by the military agencies and the corporations.

The Chicago Plan

Just as the industrial laboratory itself is militarized, the monopolists also tend to endow university research for specific assignments in the field of weapons development, or in work which will in time prove useful for war. Monopoly financing of special laboratories at academic institutions has been in vogue for some time, in connection with both industrial and weapons projects. But this practice is now becoming general, involving groups of big corporations. A new device has been developed to facilitate the process. For want of a better term, we might call it the Chicago Plan, for it was initiated at the University of Chicago in connection with atomics, but it has spread to other fields and universities as well.

A business partnership was established in 1946 between the University of Chicago and a number of big corporations to found and operate a private center of atomic research and development.[18] Three organizations were formed within the university: the Institute of Nuclear Studies, the Institute for the Study of Metals, and the Institute of Radiobiology and Biophysics. Participating corporations purchase "industrial memberships" for five years, at the specified annual rate of $50,000 in the three institutes, or $20,000 in a single institute. The plan was initiated by seven big corporations, primarily of the Rockefeller and Mellon monopoly groups.* This combination is not surprising considering the relevant circumstances. The Chicago Plan was formulated on the suggestion of E. V. Murphree, president of the Rockefeller-controlled Standard Oil Development Co., at a time when the Rockefeller and Mellon groups held only secondary positions within the government-owned atomic industry. The Rockefeller group has a vested interest in the University of Chicago, the first John D. having established the institution as a Baptist college in 1890. By 1928 Rockefeller had contributed $45 million to the university, and since then the oil clan has continued to support it.[19]

Within two years after the initiation of the Chicago Plan, 23 corporations had taken memberships in one or more of the atomic institutes of the university at an annual donation of over $700,000. Some of the giant companies of other monopoly groups participated, including Morgan's U.S. Steel Corp., du Pont's chemical trust, and the Commonwealth Edison Co. of Chicago.

As members of the institutes, the corporations are entitled to receive advance reports on all phases of research, to send their representatives to regular quarterly meetings with members of the staffs, and to exchange information and ideas with the institute personnel. Discoveries are to be patented for the use of the member corporations on a royalty-free basis for the life of the patent. Furthermore, they enjoy the services of outstanding atomic scientists engaged in the institutes, including Enrico Fermi, Leo Szilard, Harold Urey, and others who played a prominent part in the development of the atomic bomb, and who continue to serve the A.E.C. in an advisory capacity. As the operator of the Argonne National Laboratory, the University of Chicago also has access to the huge research plant and reactors of that A.E.C. center.

Among other institutions which have adopted the Chicago Plan is M.I.T., attached most directly by financing, the board of trustees, and its research work to the du Pont chemical trust, General Motors, General Electric, and Standard Oil Co. (New Jersey).* For all practical purposes, M.I.T. serves as an annex of the industrial laboratories of these trusts and as the training center of their engineers and technicians. In 1948, with the support of five oil corporations (three of them in the Rockefeller empire), each contributing $50,000 annually for five years, a research program was set up in nuclear physics and related fields. By 1950, about half of the total goal of $20 million had been pledged by big corporations, and another $7.5 million was being sought from 150 smaller companies at a lower annual fee. The benefits are similar to those of the Chicago Plan.

The Chicago Plan epitomizes the complete subordination of academic science to monopoly. Scientific research is placed directly and entirely at the service of the corporations. Even the remnants of traditional freedom of research, characteristic of an earlier period, are now vanishing, as science itself becomes thoroughly cartelized. As a consequence, basic research is constantly narrowed, and within this

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* These are: Standard Oil Development Co. (N. J.), Standard Oil Co. (Ind.), both Rockefeller-controlled; Westinghouse Electric Manufacturing Corp. (Rockefeller-Mellon); Pittsburgh Plate Glass Co., and Aluminum Co. of America (both Mellon-controlled); Sun Oil Co., and Shell Development Co. The participation of the Mellon companies represents an important departure in the "philanthropic" activities of that group. In the past these have been largely confined to institutions well within the family empire—Carnegie Institute of Technology, the Mellon Institute, and the University of Pittsburgh. Carnegie Tech and the university work closely with the Westinghouse Laboratories in nuclear weapons research. To enlarge the nuclear research facilities at their disposal, the Mellons financed a new research laboratory at the university, adjacent to its cyclotron building. The appearance of Mellon companies in the group initiating the atomic institutes at the University of Chicago reflects the Rockefeller-Mellon alliance in the atom bomb business.

* Among the biggest donors of M.I.T. is Alfred P. Sloan, chairman of General Motors and a director of both J. P. Morgan & Co. and the du Pont chemical trust. He has financed laboratories named after him at M.I.T. in the fields of metal-processing, aeronautical engineering, gas turbines, automotive and aircraft engines, and a fellowship program in business and engineering administration.

smaller compass it is permitted to function only as a stepchild of the military and monopoly.

The diversion of atomic energy to military purposes is the principal channel for the militarization of university research and scientific education, just as atomic diplomacy has nurtured the martial spirit in general. It is now becoming a commonplace to find former generals and admirals as presidents and trustees of the higher institutions of learning, positions which complement their directorships of business corporations. The educators and scientists have been brought from the campus to the myriad military committees, and the military brass appears at the universities. At a speech on a university campus, the banker and ex-Atomic Commissioner Strauss boasted that to his knowledge there are 19 colleges and universities whose presidents come from "among men with experience gained in the U.S. Navy and imbued with its peculiar spirit." If he were not so partial to the Navy, being a retired admiral, he might have mentioned at least the same number of institutions with Army militarists at their head. In addition to Eisenhower at Columbia, it is also worth citing Gordon Gray, a large stockholder of the R. J. Reynolds Tobacco Co., who went from his post as Secretary of the Army to the presidency of the University of North Carolina, once noted for its liberal atmosphere.

The leading universities and institutes, now big business in their own right as part of the major monopoly networks, have also become the focal points for the subjection of science to the military program

11. The Science Hierarchy

A PRODUCT OF the militarized phase of science in the United States is the new role of the administrator of science in the service of war. In its uppermost reaches the hierarchy of militarized science consists of a few key men, in their work and orientation personifying the integration of science, monopoly, and the military. These are the men who had long administered science for the benefit of the monopolies. During World War II they stood at the apex of the entire organizational structure of weapons research, which was continued and expanded after the war. They have become the professional administrators and ideologists of the science of munitions.

The Triumvirate

With the militarization of research as a whole, the heads of the leading universities and technological institutes are required to direct research and scientific personnel according to the needs of the military program. The administrative hierarchy, consisting of scientists who have become vice-presidents in charge of industrial research for the big corporations and directors of the institutions of higher learning, have a common bond arising from subservience to monopoly and their role in the present military mobilization of science.

The best definition of the perfect hierarch of monopolized and militarized science is given by Vannevar Bush, one of the triumvirate which ruled science during the war. The new hierarchy of science is a "professional partnership between the officers in the Services and civilian scientists." It is composed of the men who "have the intellectual fiber and background to enable them to synthesize the two types of thought, military and scientific." The professional militarized scientist will see to it that there is "no hostility between government and business, even if business is big."[1] The missing and most essential element in this definition, which Bush perhaps considered too obvious to mention, was supplied by Karl T. Compton, another member of the triumvirate, in a speech at the opening of a new research laboratory by the Standard Oil Development Co. He cited as the core of progress the "teamwork between academic and industrial research," which, to be more exact, is teamwork between the university heads and the monopolists.

The upper scientific hierarchy is well typified by Vannevar Bush, Karl T. Compton,* and James B. Conant. They were the inseparable team in charge of science mobilization during the war. In proposing the organization in 1940 of the National Defense Research Committee, the forerunner of the central munitions development agencies, Bush acted for himself, Compton, Conant, and Frank B. Jewett, at that time head of the Bell Telephone Laboratories. Their recommendations were accepted by the President, who advised them to work in closest collaboration with the military. Preliminary work on the atom bomb and other weapons was immediately brought under their control.

As president of Harvard, the top finishing school for the sons of the corporate magnates, Conant was a tireless and indispensable member of the triumvirate which directed the permanent militarization of science. His fellow hierarchs of M.I.T. had a long and intimate association in the service of cartelized science. In 1930, when he was head of the Physics Department of Princeton University, Compton was invited by Gerard Swope, chairman of the board of General Electric and also chairman of the M.I.T. Corporation, to become president of M.I.T. Soon after assuming his new post as administrative head of the most important technological institute in the country, Compton asked Bush to become vice-president, in addition to his function as dean of the Physics Department.

Since 1940, Bush and Compton between them have held the most important administrative posts in the field of military research, while Conant has operated more in the field of general policy, specializing in the atom bomb. Like Bush and Compton, Conant was a member of the Stimson Committee which decided to use the atom bomb without warning against Japan and also established the key policy governing the subordination of atomics to war. Together with Bush, Conant was also a member of the committee on international control of atomic

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* The M.I.T. hierarch has two brothers prominent in education and science: Dr. Arthur H. Compton, the Nobel prize physicist and Chancellor of Washington University of St. Louis; and Dr. Wilson M. Compton, president of Washington State College.

energy which formulated the policy later known as the Baruch Plan. During World War II, Conant assumed responsibility, as Bush's deputy, for the initial phase of the atomic industry and became chief scientific adviser to General Groves, head of the Manhattan District. After the war he continued his active participation in the atom bomb business as adviser to Baruch at the United Nations and as a member of the General Advisory Committee of the A.E.C.*

The role of Bush and Compton extended beyond the field of the atom bomb to include military research as a whole. Of the two, Compton was more mobile, ranging over the entire field of war preparations, while Bush was content to remain at the top post of administrator of military research. Compton played the leading role in the initial committees set up to establish a system of centralized military research, beginning as chairman of President Roosevelt's Scientific Advisory Board and a member of the War Resources Board, and subsequently serving in many important weapons agencies.† Bush served as chairman of the National Defense Research Committee and then became the first director of the O.S.R.D. (the central wartime weapons research agency) and chairman of the Military Policy Committee, which was established to supervise the atom bomb project. He remained head of the O.S.R.D. throughout its existence, and then became the first chairman of the Research and Development Board of the National Military Establishment when this was formed in 1947. He resigned at the end of 1948, as he put it, for the sake of "reasonable rotation" of the chairmanship in order "to increase the contacts between the military and civilian scientists and engineers." But the Bush-Compton dynasty remained unbroken. Compton succeeded Bush as chairman, resigning on account of illness at the end of 1949 with the admonition that military research must be maintained at high levels. The mantle was then passed on to William Webster, the new head of the military agency, who is a New England utility magnate associated with the same corporate complex with which M.I.T. and its hierarchs are connected.

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* In February 1949, he appointed Donald H. McLaughlin, who heads the A.E.C. raw materials advisory committee, as chairman of the National Committee of Sponsors of the Harvard Foundation for Advanced Study and Research.

† Since 1940, Compton has served in some 15 committees or posts concerned with weapons research and military mobilization. These include: Chief of the Office of Field Services of the O.S.R.D.; Chairman of the U.S. Radar Mission to Britain in 1943; member of the Stimson Committee on the Atom Bomb; member of the Baruch Rubber Survey Committee; member of the Scientific Intelligence Mission to Japan in 1945. In 1946, he became a member of the War Department Research Advisory Panel, chairman of the Joint Chiefs of Staff Evaluation Board on Atomic Bomb Tests, and a member of the Naval Research Advisory Committee. From 1946 to 1947, he also served as chairman of the President's Advisory Commission on Universal Military Training, where he worked energetically for a peacetime training program.

It is difficult to separate the function of men like Bush, Compton and Conant as science administrators for war from their function as members of the corporate structure. They are essentially part of it, since science itself has been bought up by monopoly. For a long time one of their most important functions in the corporate system has been to surround the so-called "philanthropy" of monopoly with the aura of higher learning. Compton, for example, has been a trustee since 1940 of the Rockefeller Foundation and its General Education Board, the most important of the "philanthropic" institutions through which the monopolists dispense a tiny portion of their profits (expenditures partly offset by savings in taxes) to purchase control of the universities.* Conant of Harvard has been a scientific director of the Rockefeller Institute since 1930, while Bush is president of the Carnegie Institute of Washington.

The Rockefeller institutions in particular represent the fusion of the academies and the corporations at the very apex of the oligarchy. Their trustees include, besides the M.I.T. hierarch, the presidents or chairmen of the board of Princeton University, the University of California, and the University of Chicago—institutions playing a most prominent role in the development of atomic and other weapons. No less a personage than John Foster Dulles became chairman of the board of the Rockefeller Foundation in 1950, and other stalwarts of aggressive foreign policy among the trustees include John J. McCloy, High

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* Compton has other extensive connections in this field, as a trustee of the Brookings Institute, the Edison Foundation, the Sloan Foundation, and the Ford Foundation. The latter is of special interest, since it marks the entry of the Ford (auto trust) family into the field of endowed research. The foundation has remained dormant since its inception in 1936. With assets of $230 million, representing almost 90 percent of the Ford Co's stock, its resources would exceed even those of the Rockefeller institutions if actively employed. Recently, the Fords took steps toward entering the field of "social" research. They engaged R. Rowan Gaither, Jr., to draw up a plan for research grants in specified fields. Gaither is a trustee and the general counsel of the Rand Corp., which specializes in secret weapons research. His assistant in the Ford survey was William W McPeak, former staff director and a research chief of the Information and Research Branch of the War Department. Paul Hoffman left his post as boss of E.C.A., the Marshall Plan organization, to become president of the Ford Foundation.

Commissioner to Germany, and Lewis W. Douglas (of the Phelps-Dodge copper fortune), ex-Ambassador to Britain. Gathered here, under the wing of the Rockefeller clan, is a veritable cross-section of the forces engaged in the permanent militarization of the United States.

The administrators of militarized science are bound to the corporate structure in many other ways. Their institutional tie with big business is of long standing. They have also been rewarded with corporate posts and directorships. Compton, for example, is a director of McGraw-Hill Publishing Co., the giant publishing trust of business and technical literature. In 1948 he became president of the M.I.T. Corporation, the holding company for the many business investments of the institute, of which he had been president since 1930. He also became a director of John Hancock Mutual Life Insurance Co., a pillar of that specific monopoly network in which M.I.T. is integrated. Bush, soon after resigning from the military research board, became a director and stockholder of Merck & Co., the drug monopoly which has been a leading experimenter in poison warfare for the armed services.

The hierarchs have also participated in the organization of companies to exploit the results of research carried on in academic laboratories. M.I.T. is a pioneer in fusing the applied research of its scientists with investment banking. One of its most ambitious projects is the American Research and Development Co.,* which organizes new enterprises based on the techniques developed in recent research, especially in connection with new weapons. By 1950, it had invested more than $5 million in 13 new industrial processes.

One of the most profitable ventures of American Research is Tracerlab, Inc., the largest company handling radio-isotopes and radiation instruments. Together with the Rockefeller interests, it has also taken over Airborne Instruments Laboratory, an outgrowth of three wartime development centers associated with Columbia and Harvard universities and M.I.T.*

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* The financial backers of American Research include the John Hancock Insurance Co., Massachusetts Investors Trust, and the Wall St. firm of Harriman Ripley & Co. Brigadier General Georges F. Doriot of the Harvard School of Business Administration and a former Deputy Director of the Research and Development Division of the General Staff, became president of the new company. Senator Ralph E. Flanders of Vermont, at the time president of the Federal Reserve Bank of Boston, was among the original sponsors. Compton heads the Board of Advisors, which also includes Edwin R. Gilliland, an M.I.T. scientist, and Jerome C. Hunsaker, a professor and trustee of M.I.T. Hunsaker is also an aircraft corporation director and was a member of the president's commission which recommended a huge air armada.

American Research has set up a regional board in Philadelphia and intends to establish similar subsidiaries in several key cities to extend the business of the existing enterprises and to seek out profitable new fields of investment. The possibilities of this new M.I.T.-banking syndicate fired the enthusiasm of the financial editor of the *New York Times*, who wrote:

> "Here we find as fine a blending of technical and academic knowledge with business 'know-how' as it has been our privilege to search out . . . an organization of technical advisors and directors that reads like a Who's Who of education, research, finance and industry."[2]

Another M.I.T.-sponsored enterprise engaged in both military and industrial research is the National Research Corp. This company got its start in war work, especially in the development of new high-vacuum processes for the atomic installations at Oak Ridge. The company entered the vacuum-food business by supplying powdered orange juice to the Army, from which it developed the highly profitable Vacuum Foods Corp. Its most important subsidiary, Minute Maid Corp., is controlled jointly by the parent company and J. H. Whitney & Co. of Wall Street. National Research is engaged in other profitable work, especially in metallurgical research related to jet engines, aircraft, and weapons, including new methods of refining lithium, a key raw material for the projected hydrogen bomb. Its president, Richard S. Morse, is on the A.E.C.'s Advisory Committee for Equipment and Material Control. Carroll Wilson, the first general manager of the A.E.C., was a vice president of National Research Corp., and the general manager of the Oak Ridge diffusion plant was also a former official of the company. It has extended its operations to England, where it has a 40 percent interest in British American Research, Ltd.

Special corporate organizations have been established, bringing the universities and institutes into weapons projects, backed and directed by the trusts. An outstanding example is the Rand Corp. Its predecessor was the Rand Project, organized jointly by the Air Force and the Douglas Aircraft Co. in 1946 to specialize in secret weapon research. Three other aircraft companies—Boeing, Northrop, and North American—were brought into the project which, among other things, participated in research on the atomic propulsion of aircraft. In November 1948, the project was transformed into the privately-financed Rand Corp., working under contract with the Air Force on weapons research of a highly secret type. In addition to work with its own staff, it farms out research contracts to universities and industrial laboratories. The organization is headed by a director and chief engineer of Douglas Aircraft Co., and its trustees include the heads of California Institute of Technology, University of Illinois, the M.I.T. Department of Physics, Princeton University's Department of Physics, and the directors of three leading private research organizations—Battelle Memorial Institute, Carnegie Corp. of New York, and Westinghouse Research Laboratories.[3]

The hierarchy, of which Compton is so perfect a representative, is thus a component part of the monopoly structure, closely integrated with big business and the military. The specialty of the science administrators is the organization of research for profit, and there is no greater bonanza than munitions, in terms of both immediate capital returns and the supremacy of monopoly.

Participation in the corporations by engineers and scientists who specialize in applied research has its background in the rise of the industrial laboratory and in the services rendered to corporations by the higher technological institutes. It is not unusual to find among the directors and officers of the big trusts the scientists, engineers, and geologists whose services are required in connection with raw materials or production. The need for scientists in the actual planning and supervision of military operations, as well as in devising new weapons, parallels the scientific requirements of modern industrial production. Thus one finds scientists in the armed services and on munitions committees as well as on the boards of corporations. The developments in production which drew the scientists out of their isolation in the last century now bring them full force into the corporate and military structure. Here they function not as an independent force, outside and above the masters of the corporate economy, as the apologists of the subversion of science try to suggest, but as members of the corporate personnel itself, whose functions as scientists are merged into their role as directors and officers of the trusts.

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* In 1945, these wartime laboratories were taken over by Aeronautical Radio, Inc., which is owned jointly by the chief airlines. In December 1950, all stock of Airborne Instruments Laboratory was bought in about equal portions by American Research & Development Corp., Laurance S. Rockefeller and certain of his associates, and a group of executives of the laboratory.

Scientists in Revolt

Among scientists there is a deep cleavage resulting from the misuse and distortion of science. The atmosphere of police terror obscures this inner conflict, but it rages unabated. On the one side are those scientists who are either part of the hierarchy or dominated by it, themselves active protagonists of war. In varying stages of opposition to this group are the greater number of scientific workers, not always clear as to the paramount issues and therefore subject to confusion from the prevailing propaganda. Nevertheless, among American scientists there is a strong undercurrent of opposition to the militarization of research, the imprisonment of the spirit, the degradation of thought and personality, and the domination of organized research by an oligarchy sold body and soul to the corporations. And this current persists, despite the corruption that taints the atmosphere of higher learning.

A few courageous scientists of note have fought the war inciters, some joining with Joliot-Curie and his European colleagues in the Stockholm Appeal for banning atomic weapons. Others have stubbornly refused to participate in weapons research, out of a general aversion for war, a mature political opposition to the specific aggressive policies now prevailing, or out of refusal to submit to the policing of science. The first chairman of the A.E.C., David Lilienthal, had to acknowledge "a disturbing situation that threatens success of the atomic energy enterprise . . . the increasing unwillingness of specially qualified scientists, engineers, and management experts to engage in work for the government of the United States." He referred to this as a "grave and ominous situation" threatening "imminent stagnation" for the A.E.C. enterprise.[4] Many have carried on the important fight against military control, subordination of basic research, thought control measures, or suppression of academic freedom.

Most nuclear scientists, who can appreciate vividly the destructiveness of atomic warfare, would disagree with Prof. Edward Teller of the University of Chicago, now returned to head the weapons research division at Los Alamos, when he urges the concentration of everything upon the immediate achievement of maximum armament, including the hydrogen bomb.[5] They would be shocked at the brutalization of the human spirit reflected in the remark of Louis N. Ridenour, Dean of the Graduate School of the University of Illinois, that radiological warfare would be a "remarkably humane" method of mass destruction.[6]

Nor would many share the cynicism of Dr. Jerrold R. Zacharias of M.I.T. when he holds that because "we have forfeited the privilege and strength of a strong moral position" by the use of the atom bomb against Japan, its further use must be determined only by considerations of expediency.[7]

Such attitudes come dangerously close to the total degradation of science and scientists in Nazi Germany. For any humane and balanced mind they should sound the alarm. A Geiger counter for gauging thought pollution would respond with thunder to the poisonous particles, more pernicious than radioactive dust, that now cloud the atmosphere and penetrate the very core of American life and culture.

The transformation of scientists into components of a military machine serving an aggressive imperialist policy has inevitably given rise to the hierarchy with the specific traits of which we have spoken, and to the subornation of science, as organized research as well as in its broader cultural aspects. Science as a mode of thought, as a great achievement in the development of knowledge, and as part of our entire social heritage is being infected in its very fiber. But this process, rooted in the stage of maturity and therefore also the stage of disintegration attained by American monopoly, sets in motion an opposing tendency, a counter-movement in defense of science, just as disease in the human body activates antibodies to fight the invader.

The cleavage within science finds numerous expressions in the area of theory as well as in the field of political activity. Controversies range over the entire field of science, which reflect the struggle between various forms of philosophical idealism on the one hand and the dialectical materialist approach of Marxism. It is an indication of the deep crisis in science within the capitalist orbit that theoretical controversies such as these, in which the Marxist position can no longer be ignored in any branch, must figure in the general line-up of forces and of argument. In every country are to be found prominent scientists, some at the apex, who have brought Marxist philosophy and approach into their own field of work, and have imparted a broader vision to science as a whole, infusing it with the sense of social values.

In the United States, the struggle to safeguard basic research against the militarized hierarchy has played an unusually important role in the activities of scientists. They sensed very early that basic research was in danger of being subordinated entirely to the military program, and that they were on the verge of becoming prisoners of war. The science administrators, being somewhat more far-sighted than the generals, realized that weapons work would also suffer if basic research were permitted to lapse. The latter viewpoint was most prominently put forward in July 1945 by Vannevar Bush, whose report to the president, *Science, the Endless Frontier,* recommended a government-owned National Science Foundation.

Progressive scientists also demanded a National Science Foundation for basic research, but free from the incubus of military programs. In the subsequent five-year fight around the various bills introduced in Congress to set up a Foundation, two well-defined tendencies emerged among the scientists. It is worth-while to quote the findings of Prof. Talcott Parsons, member of a committee appointed by the American Sociological Society, to assess the proposed legislation. Parsons describes the differences which had developed in the scientific community by 1946 as follows:

"Very broadly speaking, this was a division between an inner group which had played the leading role in the work of the Office of Scientific Research and Development during the war and were associated with the institutions where the bulk of that work had been done and, on the other hand, a much broader group of scientists all over the country.

"The first group seemed to be above all concerned to preserve the control of the Foundation in the hands of highly qualified scientists who had proved their capacities in the field of war research. In turn this seemed to many to mean that the bulk of research under the auspices of the Foundation would be concentrated in the rather small number of university and industrial research laboratories which had played the most prominent part in the work of O.S.R.D., such as the M.I.T., Harvard, the University of Chicago, Columbia, the Bell Telephone Laboratories, and the G.E. Company Laboratories. The opposing point of view tended to be suspicious of too great a monopoly in the hands of a 'scientific oligarchy' and of a privileged group of research institutions, both academic and industrial. . . .

"The 'Bush' position has tended to become identified both with political conservatism, and with a desire to exclude the social sciences.'"

As was to be expected in view of the prevailing policy, the act finally passed in 1950 authorized a National Science Foundation which is a far cry from the institution desired by most scientists. The door was left wide open for it to be incorporated in the military

program. Although not required by law to carry on weapons research, it may enter this field at the request of a war agency. Conditions for military research are also established by the provisions requiring that all applicants for Foundation research grants shall sign non-Communist affidavits and pass loyalty investigations, while researchers with access to information classified as secret must also be approved by the F.B.I. Since the Foundation is to emphasize research in physics, chemistry, and engineering, it will be operating in fields where most of the vital information is already padlocked as secret. It is endowed with other attributes of a typical military research institution. The system of contract research is to be used, and this means that the same select group of big corporations and institutes which have hitherto carried on military research will receive most of the awards. The Foundation is to be controlled directly by the President of the United States, who is to appoint its Director and also the Board of 24 members which has only advisory power. In every essential respect, the war oligarchy won out; it only remained for one of the triumvirate to be appointed head of the National Science Foundation.*

Despite this outcome, the struggle around the Foundation has served to crystallize the division between the hierarchs and the majority of scientists, which began during the wartime atom bomb project, and was intensified in the inner controversy over the use of the bomb against Japan. Alarmed by the destructive potential of the new weapon, and by the openly reactionary elements coming to the fore in the political life of the country, the scientists began to organize. Within a month after the end of the war, the scientists engaged in work on the atomic weapon formed associations in four research centers—Columbia University, University of Chicago, Los Alamos, and Oak Ridge. In November 1945, these groups merged into the Federation of Atomic Scientists, which then joined in the following month with organizations of scientists from the rocket, radar, and other wartime laboratories to form the Federation of American Scientists.

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* In December 1950, James B. Conant was named chairman of the National Science Board, the governing body of the Foundation. Alan T. Waterman, formerly technical director of the Office of Naval Research, was appointed the Director of the National Science Foundation. Nevertheless, in August 1951 the Appropriations Committee of the House cut the requested budget for the Foundation from $14 million to $300,000, on the ground that basic research does not promise immediate contributions to the military program.

For the first time in the United States, a national organization of scientists frankly proclaimed social and political aims. Its constitution announced the purpose of the new Federation "to meet the increasingly apparent responsibility of scientists in promoting the welfare of mankind and the achievement of a stable world peace." It was also stated: "The value of science to civilization has never been more clear nor have the dangers of its misuse been greater."

This was a challenge to the hierarchy of militarized science. With a membership at its height of 3,000 scientists who had participated in weapons research, the Federation led an energetic legislative fight against the May-Johnson Bill, worked for a National Science Foundation devoted to non-military basic research, and sought to check the avalanche of such restrictions upon the freedom of science as security clearances, loyalty tests, and F.B.I. dossiers. But the Federation fell far short of the aims originally proclaimed, and proved none too effective even within the restricted field of its activities, for at best it remained confused about the general aims of American foreign policy. Officially it supported the Baruch Plan, thus failing within its own field to meet the paramount issue of peace, and also failing to condemn the atom or hydrogen bomb as weapons of mass destruction identified with an aggressive, war-provoking policy. As late as February 1949 the Federation reiterated support of the Baruch Plan, when it had long since become apparent that negotiations were impossible on this basis. Failing to offer courageous leadership to the scientific workers rebelling against the prostitution of science, by 1950 the membership of the Federation had declined by at least half.

Scientists of Britain, France, and other countries met the challenge more effectively. The Association of Scientific Workers of Great Britain, a trade union with considerable membership among academic and industrial scientists, in its statement of August 1947 supported the proposal for an immediate ban on the bomb and criticized the British and American governments for failing to agree to it. Rejecting the Baruch Plan as the only basis for agreement, and pointing to its proposals for unwarranted interference in national affairs, the scientists criticized the Labor Government because it had not developed an independent position looking toward a compromise between the American and Soviet proposals. The Association reflected directly the sentiment of the people of Britain and western Europe when it expressed alarm at the official American military view that the function of allies is to provide an "atomic cushion" for the United States.

This position was supported by the French Association of Scientific Workers, which went further in demanding a pledge from governments that they would not be the first to use atomic weapons, a demand later incorporated in the Stockholm Pledge. The French Association also urged all scientific workers to join in "a collective refusal to participate in biological and therapeutic research the results of which would not be normally published."* This demand was directed against research for biological warfare, France already being pledged to refrain from nuclear weapons development.[9]

It is now rather well realized that scientists can no longer ignore the implications of their discoveries and work. The militarization of science has thrown them into the maelstrom of politics. The science hierarchs are no less responsible for criminal results than the war-inciting political leader or the general who might urge or order the use of an atom bomb or "death sands" against any country. Science has been harnessed to war. The scientist must make his moral and political judgments in the light of the policy that science is called upon to serve. In this respect, he has even greater responsibility than the ordinary citizen, for the scientist is better aware of the uses to which his contributions may be put. While such decisions must be made personally, action itself is social, and therefore the scientist must seek common ground with the popular forces seeking to save our country and the world from a new war.

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* A number of individuals in the United States have urged scientists to refuse to engage in weapons research and development of any kind. See, for example, the article "Freedom Demands Responsibility" by Cuthbert Daniel and Arthur M. Squires, industrial scientists who had participated in Oak Ridge operations during the war. (*Bulletin of Atomic Scientists,* Oct. 1948.)

12. The Uranium Rush

WE HAVE SEEN how the most prominent protagonists of atomic diplomacy are directly linked with the metal-mining monopolies. These are involved in the struggle for control of world uranium, the richest sources of which are outside the United States.

The uranium mines have become the most coveted sources of raw materials, for their control assures domination of the atom bomb business. In general, no matter where the atomic industry is probed, whether in its economics, its technology, or its politics, it is found to lead into the most vital currents of world affairs. This is especially true in the field of raw materials, and primarily pitchblende, the principal source of uranium. The struggle for control is carried on by the peak monopoly groups throughout the complex network of world corporate relations and throughout the entire fabric of foreign diplomacy.

The richest uranium deposits accessible to the United States are located abroad, in the Belgian Congo and in Canada. Domestic ores are inferior and are only a secondary source of supply for the atom bomb business.* They might prove enough for an enterprise devoted to the development of atomic power and other peacetime applications. But the frantic stockpiling of nuclear explosives demands not only the most intensive exploitation of domestic ores but also exclusive control of world resources. The groups attempting to establish an integrated atomic weapons trust seek monopoly control of all source materials at home and abroad.

The Vanadium Cartel

By far the most important domestic source of uranium is carnotite ore, which is found on the Colorado plateau, extending through southwest Colorado and southeast Utah. But these ores are low in uranium content. Their extensive exploitation for radium proved profitable only until the 1920's, when the rich uranium-bearing pitchblende mines of the Congo started production.

The carnotites also contain vanadium, which is used in metal alloys. World War II created a demand for this mineral, and the carnotite mining industry of the Colorado Plateau boomed again, reaching a peak of vanadium production in 1943. By then, the new atomic enterprise was getting started, and interest developed in the uranium content of carnotite. As a by-product of vanadium, uranium became a new source of wealth for the mining corporations in 1948, when the A.E.C. announced guaranteed bonanza prizes for the ore.

Two companies dominate the mines of the Colorado plateau—the United States Vanadium Corp. and the Vanadium Corp. of America. The former, as already noted, is a fully-owned subsidiary of Union Carbide, which controls the production of enriched uranium at Oak Ridge. It is the leading producer of vanadium in the United States. But the Vanadium Corp. of America, although the secondary domestic producer, owns the mines at Mina Ragra, Peru, which supplied nearly one-third of the world vanadium output before the war. At that time the United States was the second producer with 27 percent of world output.[1] As a result of World War II, the output of the Peruvian mines was greatly expanded. The United States government financed for the corporation the construction of a new $4-million processing plant at Mina Ragra, which began operations at the end of the war.[2] Vanadium Corp. of America also has quartzite and chrome mines in Canada, and it owns the Rhodesia Vanadium Corp., which includes among its African properties the rich chrome deposits of Southern Rhodesia.

Between them, therefore, the Union Carbide mining subsidiary and the Vanadium Corp. of America control world vanadium output, and thereby the most important secondary source of uranium.

Vanadium Corp. of America is very tightly linked financially and through common directors with Air Reduction Co. This chemical firm, which is a leading producer of industrial gases, holds the bonds of Vanadium Corp. and purchased privately in January 1941 a total issue of capital shares of that company. Four directors of Air Reduction or its subsidiaries, including the chairman and a vice-president of the parent firm, are directors of Vanadium Corp.

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* The Tenth Semiannual Report of the A.E.C. (July 1951) claimed that domestic ore production during 1950-51 increased to the point of surpassing current Canadian output, placing the United States second only to the Belgian Congo. In view of the rate of discovery of new pitchblende sources in Canada it is unlikely that the United States can maintain this position for long.

Within Air Reduction, a dominant influence is maintained by the branch of the Rockefeller family descended from William, brother of the first John D. Rockefeller. This branch historically developed a community of interests with the Stillman and Cleveland Dodge families, associated with the copper trust and with the Morgan monopoly group through National City Bank of New York. Avery Rockefeller, grandson of William, now heads a corporate complex, distinct from but sometimes associated with the main Rockefeller group headed by John D. Rockefeller, Jr., and his sons.*

Alongside Avery Rockefeller on the board of Air Reduction are to be found representatives of the Mellon monopoly group and of Brown Bros. Harriman, the investment firm of the family whose W. Averell Harriman was U.S. ambassador-at-large of the Marshall Plan organization and then became President Truman's special adviser on foreign affairs. The grouping of monopolists controlling Vanadium Corp. of America suggests a community of interest in the atom bomb business reaching beyond raw materials and connected with the special position of Union Carbide at Oak Ridge.

Union Carbide's mining subsidiary and Vanadium Corp. of America maintain between them an exclusive cartel. In an anti-trust case brought against these companies in June 1946, they were charged with using their wartime role as purchasing agents of vanadium ores for the government to set up a world monopoly over this alloy metal, including the fixing of prices. The corporations replied by pointing out that they were acting in complete concert with the Manhattan District, to which they supplied uranium as a by-product of their vanadium operations. In the interests of the atom bomb business, charges of illegal cartel practices were dropped on the ground that output data on carnotite could not be revealed since it is a source of uranium. Only the price-fixing charges against the companies remained, but these meant little in view of the A.E.C.'s price-fixing of uranium ores.[3]

Later, in the course of another law suit by a minor ore company which had been forced out of business by the vanadium cartel, it was brought out that the two corporations controlled 95 percent of the ore deposits and the entire distribution of vanadium. The company bringing the suit charged the two leading corporations with refusing to sell vanadium to other producers, fixing prices, and dividing the entire market between themselves by annual preclusive sales contracts.[4]

Through arrangements with the A.E.C., the vanadium cartel controls the uranium industry of the Colorado plateau. The two corporations became the purchasing agents for the A.E.C. of uranium-bearing carnotite ores, and control the processing mills expanded or constructed at government expense.

In April 1949 a contract was made between the A.E.C. and U.S. Vanadium providing for the purchase by the government, at a price guaranteed for five years, of the entire uranium output of the company's processing plant at Uravan, Colorado, where new equipment and facilities were to be installed for the recovery of uranium from carnotite. This is the largest processing mill on the plateau. Under the same contract, the mine properties acquired during the war by the government at Calamity, Colorado, were leased to the Union Carbide subsidiary on a royalty basis. The corporation also expanded the facilities of its processing plant at Rifle, Colorado.

Vanadium Corp. of America operates under lease from the A.E.C. the government-owned processing mill at Durango, Colorado. With the aid of high subsidy prices and special premiums, the company expanded its old plant at Naturita, Colorado, and constructed a new one in the White Canyon district of southeast Utah.[5]

However, other companies are beginning to intrude upon this monopoly of domestic uranium ores. On the Colorado plateau the main threat comes from mining corporations within the Morgan sphere of influence, and may be considered part of the effort to undermine the position in the nuclear weapons business of the Union Carbide and vanadium cartel combination. In the spring of 1949, American Smelting & Refining Co. was designated as the ore purchasing agent and manager of the processing mill at Monticello, Utah, which is owned by the A.E.C. and had been expanded and improved at government expense. According to the Commission, the Monticello mill was to specialize in the recovery of uranium from the extensive lime deposits of Utah, involving processes somewhat distinct from those used in the separation of uranium from carnotite.[6] A more direct threat to the vanadium cartel came in 1950, when Climax Molybdenum Co. announced that its subsidiary, Climax Uranium Co., would construct a processing plant at Grand Junction, Colorado, in the heart of the carnotite fields, and would undertake extensive development and mining operations.[7] American Smelting was also made purchasing agent for the A.E.C. for the ores in the new field around Marysvale, Utah.

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* Among the most important connections of Avery Rockefeller is the Schroeder banking combine associated with the Ruhr industrialists. John Foster Dulles' law firm helped set up in New York the J. Henry Schroder Banking Corp. as a branch of the London Schroeder bank, with which it participated in the rearmament of Germany between the two wars. After World War II, this banking syndicate continued as a focal point of Anglo-American-German cartelists. The New York bank's board included Robert P. Patterson, former Secretary of War. Avery Rockefeller maintains liaison with this banking syndicate through the firm of Schroder, Rockefeller & Co., Inc., of which he is vice president and director. (The London branch retains the German spelling of Schroeder, while the New York syndicate Americanized the name to Schroder.)

Apart from carnotite, no significant and proved source of atomic raw materials has been found in the United States, despite intensive exploration. In a review of uranium exploration in this country up to 1950, an official of the A.E.C. Raw Materials Division could point only to certain "promising indications." Some pitchblende has been found, mostly in the abandoned silver mines of the Colorado Front Range, in the north central part of the state, and in the Coeur d'Alêne district of Idaho.

In the former area, sensational claims were made that the find in the old Caribou silver mine would relieve the United States of dependence on foreign pitchblende. This pretentious claim was immediately labeled by the A.E.C. as a "gross exaggeration."[8] Further exploration of the Caribou diggings and of the worked-out mines of Quartz Hill, which in the past had produced some uranium as a by-product, do not indicate extensive deposits. In the Coeur d'Alêne area, the Sunshine Mining Co. is developing its old silver mine for uranium possibilities.*[9]

As a matter of policy, the Atomic Energy Commission is committed to safeguarding the private property rights of the mining corporations, which in practice has meant the privileged position of the vanadium cartel. Congress took pains to write into the Atomic Energy Act provisions guaranteeing existing corporate ownership of mineral rights and mine properties, and establishing A.E.C. control over the uranium ores only after they had left the mine face or mill. Furthermore, the provision in the law reserving the rights of the government to new uranium deposits on public lands is not retroactive, so that the corporations now in possession of mineral rights in the carnotite fields of the Colorado plateau (which is public domain) are assured of their continuing monopoly. Even as new atomic ore fields may be discovered by government geologists on state-owned lands, the policy of the A.E.C. is to lease mineral rights to the private corporations. The full expenses of exploration and of laying out new veins, and also of developing new techniques required to recover uranium from poor-content ores, are met by the government.

The new techniques of exploration and recovery of minerals from low-content ores are of value not only in uranium extraction, but also in the mining and preparation of other ores. At Congressional hearings, spokesmen for the U.S. Vanadium Corp. admitted that new methods of separation and treatment of uranium-bearing ores which had been developed in the Manhattan District can be applied to the vanadium industry as a whole.[10] In the attempt to increase the domestic supply of source material for atomic weapons, the A.E.C., the Bureau of Mines, and other federal agencies energetically carry on extensive development work, the results of which are given gratis to the corporations.

At the end of its first year of operation, the A.E.C. stated as a matter of policy that the development of source materials would be left primarily to "competitive private industry, under the stimulus of profits."[11] It can be said that the A.E.C. lived up to this promise faithfully and competently, under the guidance of the mining monopolies in control of the Raw Materials Division.

In addition to all the benefits already set forth, the mining corporations receive high guaranteed prices from the government, amounting to an extraordinary subsidy, and serving also as a means of fortifying the existing cartel. The guaranteed minimum price of $3.50 per pound of uranium recovered from carnotite, plus liberal development and haulage allowances, was extended to 1954. This is a ten-fold increase in the price for uranium ore of the Colorado plateau, which was 35 cents a pound before the new government prices went into effect in April, 1948.[12] Carnotite ores with a uranium content as low as one-tenth of one percent are purchased by the A.E.C., with the result that even the poorest deposits, long since discarded by the vanadium corporations, again become profitable.

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* Some excitement was also aroused by the discovery of secondary uranium minerals in two other places. Around Marysvale, in the southern part of Utah, claims are being developed by Vanadium Corp. of America and Bullion-Monarch Mining Co. In the Upper Peninsula of Michigan, Jones & Laughlin Steel Corp. is engaged in active exploration. In addition, black shales and phosphate beds are known to contain some uranium. In 1951, progress was reported on by-product extraction of uranium from phosphate rock, with one company scheduling a plant in Florida.

Additional inducements are offered for the discovery of high-content ores. The minimum price for such ores is guaranteed until 1958, and a bonus of $10,000 is paid for the discovery of a new deposit, no matter how small, if it will produce only 20 tons of uranium ore containing at least four tons of uranium oxide, from which the metal is derived.* The bonanza profits that may be obtained even from small veins were demonstrated by a Canadian mining journal, on the basis of Dominion prices, which are similar to the American agreed price. Not counting the bonus, a mining width of only 30 inches containing a pitchblende seam of two inches would bring a price of $601.25 per ton of rock. This explains, the journal points out, "why the mining companies are eager to acquire properties."[13]

As a result of this policy, a world cartel price for uranium ore has been established and is maintained by the United States government. The minimum guaranteed prices set by the Canadian and British governments correspond to the American schedule, and are guaranteed over a long period. The prices paid by the A.E.C. for uranium procured from the companies controlling the chief pitchblende sources of Canada and the Congo are not published. These prices are negotiated with each company separately, as part of the buying monopoly maintained by the United States over the output of the richest two raw material sources. The high premium price paid by the United States government for uranium is thus one of the important means by which it has safeguarded uranium output for the benefit of the monopolies running the atom bomb business.

These policies lead to the rapid exhausting of skimpy domestic sources for the sake of piling up nuclear explosives. Even lip service to conservation of national resources is entirely absent. The overriding consideration is to feed the atom bomb industry at any cost. Trust-busting demagogy which periodically bursts out in American political campaigns is forgotten when it comes to atomics. In the meantime, while the American people are being deprived of their national resources and the potential benefits of atomic power, the vanadium cartel is quietly gathering in its bonanza profits.

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* In March 1951, a new schedule went into effect, raising the bonus as high as $35,000, and also increasing minimum guaranteed prices and special premiums for the ore of the Colorado Plateau.

I.C.I.'s Corner on Thorium

Before going on to the main drive for control of world uranium resources, we turn to an element which has potentials as a nuclear fuel, but does not now play a role in the American atomic industry. A fissionable uranium isotope (U-233) can be obtained from thorium if it is "burned" together with enriched uranium in an atomic furnace. However, for reasons of its own, the A.E.C. discounts the immediate importance of this element and makes no effort to stockpile the ore, although recently surveys have been initiated to uncover new thorium deposits in the United States.[14]

Perhaps this lack of interest can be explained by the fact that, while thorium is more plentiful in nature than uranium, the chief source of the mineral is controlled by Imperial Chemical Industries. The main sources of thorium are the monazite sands along the coasts of India and Brazil. Little or no thorium ore has been mined in the United States since 1917. Such thorium metal as is produced by Westinghouse and Metal Hybrides, the Ventures subsidiary, must depend upon the availability of monazite imports. And the main sources of these have been cut off.

The biggest monazite deposits are located in the State of Travancore, India. In April 1946, the Dewan of Travancore ordered suspension of monazite shipments to the United States, ruling that the ore must be processed domestically before being shipped abroad. Some three years after the decree, there was no indication that the ban would be lifted. The Indian deposits are owned by the State of Travancore, and are controlled jointly with the British government. The concession from the government for working the deposits is held by Hopkins & Williams, Ltd., which is controlled by Imperial Chemical Industries.*[15]

Imperial Chemicals therefore controls monazite both at its principal source and at the distribution point in New York. Furthermore, shipments from Brazil, which during the war supplied less than one-third of United States monazite imports, have also slowed down.

Control of thorium by Imperial Chemicals may explain the enthusiasm in certain British quarters for the atomic possibilities of the element, in contrast to the indifference of the A.E.C. Even as the A.E.C. announced that thorium was of no immediate practical importance, great expectations were held out for the element as an atomic raw material, especially as a "breeder" of nuclear fuel, by Sir W. A. Akers, the Imperial Chemicals director who was in charge of the British wartime atomic project. At any rate, the British are going ahead with the development of Indian thorium deposits. The Atomic Research Committee of the Council of Scientific and Industrial Research of the Indian government recommended an intensive survey of the thorium-bearing minerals of Travancore, and set up a subcommittee for a similar survey of uranium possibilities in India.[16]

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* The leading sales agency for monazite in the United States is C. Tennant & Co. of New York, the American branch of Charles Tennant & Co. (Carnoustie), Ltd. This firm has been fully consolidated into Scottish Agricultural Industries, Ltd., a subsidiary of Imperial Chemicals, and is now known as S.A.I. (Dundee), Ltd.

Events will in time reveal whether thorium has an important role to play in atomics. Since a somewhat greater interest in the potentials of atomic power has been shown by the British than by the American A-bomb chieftains, the British may possibly concentrate upon perfecting a thorium-breeder reactor, especially since their access to uranium is becoming more limited. In any case, the giant Imperial Chemicals combine dominates this potential atomic source material.

The Main Drive

In seeking an unchallenged monopoly of uranium, the peak monopoly groups devote their main attention to the richest sources, the pitchblende mines of the Belgian Congo and Canada. Despite the feverish hunt for new deposits, no find comparable to these has been recorded. According to Commissioner Pike, who has had considerable experience as a geologist and engineer for the mining trusts, all efforts have met with a "notable lack of success."[17] The atom bomb business is therefore largely dependent upon the Canadian and Congo mines for its uranium.

The struggle for control of uranium assumes world proportions and involves the central international groupings of finance capital. Besides seeking to dominate the corporations which now control the Belgian and Canadian mines, the monopolists would also like to bring back into their fold the ancient mines of Joachimstal in Czechoslovakia, the Schneeberg deposits in Saxony (now part of the East German People's Republic), and the fields recently reported as found in Poland and Bulgaria.* The Soviet Union has long had available within its borders important uranite deposits, and recent discoveries have also been reported. Uranium possibilities in the largely unexplored mineral regions of China are also great. As in other respects, a complete world monopoly is out of the question. The American trusts must seek their quarry in areas available to capitalism, areas becoming progressively more limited and, moreover, rather thoroughly explored and exploited already. Accordingly, the struggle to dominate the richest sources available to the "Atlantic Community" is particularly fierce.

The drive of the American trusts proceeds simultaneously on two planes: the use of atomic diplomacy to bring uranium output under the control of the United States; and direct penetration by finance capitalist groups into the combines owning the uranium mines.

During the war, by agreements with the respective governments, the United States obtained priority to the uranium output of Canada and the Belgian Congo. Details of these pacts were never made public, but they were part of the same understanding by which Britain agreed to suspend independent atomic experiments and to carry on its activities under United States direction in the Manhattan District. In new agreements after the war, the United States continued to monopolize uranium output by preclusive buying. Max Cosyns, the Belgian scientist, protested as late as the end of 1948 that his country could not obtain uranium from its own colony, even in the small quantities needed for scientific research.[18] In connection with Anglo-American negotiations in the latter half of 1949, it was suggested in the press that Britain was demanding more uranium, as well as information on new processes developed in the American atomic industry since the end of the war. But a Foreign Office spokesman denied reports from Brussels to the effect that the British government had asked Belgium for more uranium. He also declined to confirm Washington reports that Britain, under an agreement with Belgium, Canada, and the United States, was entitled to receive half the Congo output but had taken her share only in one year since 1945.[19]

No matter how complete the present preclusive buying monopoly, it does not guarantee continuing control as long as the principal mines remain under the wing of world combines which the American trusts do not completely dominate. Despite the Marshall Plan, the Atlantic Pact, and other devices for bringing the west European powers and their colonial dependencies solidly within the American imperialist orbit, the peak monopoly groups of the United States cannot be satisfied until they possess title to the resources they covet. Accordingly, the inter-government agreements may be considered temporary expedients, useful also as instruments in the inter-monopoly conflict, pending the more thorough penetration by the American mining trusts of the combines controlling the chief sources of uranium.

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* On November 1, 1948, the Associated Press reported from Warsaw a uranium find west of Wroclaw in Silesia which it said was among the richest in Europe, topped only by "recent discoveries in the Soviet Union."

The central instruments in this drive are the powerful metal-mining trusts, which have already brought under their sway the entire range of mineral ores. Uranium in its natural form is usually found in combination with metal ores already monopolized by the mining trusts. The atomic raw material occurs in conjunction with copper, gold, silver, tin, tungsten, iron, lead, zinc, vanadium, bismuth, nickel, cobalt, and other metals, as well as with the rare elements, such as radium. Although the major product may be copper or nickel, the mining trusts invariably produce other metals which are found in the veins or regions they control. These same corporations possess mineral rights in regions rich in ores and most likely to contain new finds, and they hold mining concessions in vast colonial regions. They also control the separation and refinement processes. These circumstances have facilitated very close cartel relations throughout non-ferrous mining, as well as the pyramiding of companies into huge combines.

Accordingly, the attempt to corner world uranium starts at a very high level of monopoly in the field of minerals in general. It is not a question of establishing a new monopoly specializing in uranium. The peak monopoly groups of the United States are seeking to rearrange in their own favor the entire complex of world cartel and corporate relations so as to corner the richest raw material sources, including uranium.

13. Canadian Pitchblende

THE RICH PITCHBLENDE resources of Canada are at the complete disposal of the American munitions industry. Control of uranium is established at the government level by an agreement negotiated during the war and extended since then, and at the corporate level by the dominant role of American monopoly in the Canadian economy.

Monopoly control through mixed state and corporate instruments is characteristic of the atom bomb business in general. It is particularly marked in the Canadian uranium industry. The company dominating the chief source of pitchblende is state-owned, and it also controls the uranium output from the mines of private corporations. As we shall see, this arrangement serves very well the interests of the peak monopoly groups.

Eldorado, Crown Company

Eldorado Mining & Refining Co. (1944), Ltd., a Dominion-owned corporation, controls the richest proven Canadian source of pitchblende, which is situated at Echo Bay on Great Bear Lake in the Northwest Territories, above the Arctic Circle. When the Dominion took over the company in 1944, it had the mineral rights to 4,000 acres in this region, including the main silver-pitchblende deposit and ore treatment plant at La Bine Point (Port Radium), and its refinery at Port Hope, Ontario. Since then production at the plant has been expanded beyond the original ore capacity of 100 tons daily and the refining capacity of eight grams of radium monthly. Besides the main business of supplying uranium to the American munitions industry, Eldorado also produces and sells isotopes and radioactive compounds, as well as radium and luminous preparations for instrument dials.

To assure that uranium from all sources is channeled into the munitions industry, the refining of uranium in Canada has been centered at Eldorado's Port Hope plant. Eldorado has been designated as the government purchasing agent for all uranium-bearing ores and concentrates.[1] This became necessary because of the feverish hunt for uranium in which many companies participate. Eldorado itself carries on intensive exploration, and since 1949 has concentrated most of its new work in the Goldfields area of Saskatchewan. According to C. D. Howe, Dominion Trade Minister, by the end of 1949 this field was moving into the production stage.[2]

Most major mining companies have joined the hunt for the prime strategic raw material of war. In December 1947, the Dominion and the provincial governments revoked orders in force since 1943 which reserved to the state all new discoveries of radioactive ores. The prospecting boom burst forth in full force. Finds having various degrees of importance have been recorded, from the Northwest Territories down through Manitoba and Saskatchewan and across into Ontario. But none seems to approach in importance the Eldorado mine at Great Bear Lake.

As a crown company, Eldorado is owned by the state, but in reality it is part of the corporate network which controls the Canadian economy. The history of this company and the composition of its present board of directors throw considerable light upon the forces actually in control.

Before the war the original company (Eldorado Gold Mines, Ltd.) was controlled by American capital. Incorporated in 1926 to operate a gold mine in Manitoba, a venture which proved unsuccessful, it hit pay dirt when Gilbert La Bine, president of the company, discovered the pitchblende vein at Great Bear Lake in 1930. Within a few years its output of radium was important enough to command a forty-percent share of the world market. The big capital required by these developments was provided by American interests who joined Gilbert La Bine and his brother Charles on the board of Eldorado. They included a General Motors executive and a Chicago banker.*

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* In 1939, the Eldorado board included Irving B. Babcock, president of Yellow Truck & Coach Manufacturing Co., an affiliate of General Motors; Charles B. Bohn, chairman of Bohn Aluminum & Brass, which is a leading supplier to the auto trusts; and Harry Snyder, the Chicago banker who became treasurer of Eldorado in 1936. For one reason or another, these no longer appeared as directors of Eldorado in 1941. At that time, the La Bine brothers remained as president and vice-president, while Carl B. French of Chicago and Toronto, who headed a number of radium-product firms in Canada, became secretary-treasurer. Other members of the board were Canadians, associated with La Bine in various mining ventures. While others appeared in the directorate of the company, these American interests may have retained their control of shares.

By the time the Dominion took over the company as a war measure on February 28, 1944, no prominent American capitalist appeared on the board. If at that time the controlling bloc of shares still remained in the hands of the American financiers, they received back not only their original investment, but also collected in advance on the future profits of the company. The Dominion paid $1.34 a share for stock that had sold at 30 cents in 1940.

Eldorado's directors are now of Canadian nationality, as befits a crown company. The manager and president is W. J. Bennett, member of the Canadian Atomic Energy Control Board. Eldorado is togged out in Canadian fabric from top to toe, and endowed with the dignity of official status, but the inside is something else again.

Its board is manned solidly by directors with significant outside corporate connections, some in the private uranium-mining companies and others linked to the peak monopoly groups in control of Canadian mining in general.

Four of the seven Eldorado directors were carried over from the board of the old company when it passed to state ownership. These have been associated for some time with Gilbert La Bine, former president and now director of Eldorado, in a group of interlocked mining companies, in which American capital plays a substantial, if not controlling, part. The companies in the group in which La Bine and his fellow Eldorado board members have common interests are engaged in a number of gold-mining enterprises.* But their interests also include uranium companies, at least one of which may rival Eldorado, if the promoters are to be believed. In December 1950, Gilbert La Bine was reported seeking $1 million to bring into operation the Nesbitt-LaBine Uranium Mines, Ltd., which claimed to have struck the richest pitchblende deposits of the western hemisphere in the Goldfields area of Saskatchewan, where the Eldorado crown company was already operating.

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* The most important are the Gunnar Gold Mines, which has mineral claims in Manitoba, Northwest Territories, and Ontario; and Shawkey Mines, Ltd., established in 1945 to run gold mines in Quebec. The La Bine brothers are president and vice-president, respectively, of both companies, while two directors of Eldorado—J. A. MacAulay and Fraser D. Reid—are on the boards. American capital is invested in them. Gilbert La Bine is also a director of Teck-Hughes Gold Mines, Ltd., one of the leading gold producers of Ontario, in which American capital appears dominant and whose chief officers are U.S. citizens. Gilbert La Bine is also a director of Howey Gold Mines, Ltd., a holding and exploration company with interests in the Teck-Hughes and other mines. R. T.

Eldorado directors have other ties with uranium companies which bring them into the chief monopoly complex dominating the mining industry of Canada.

Gilbert La Bine's brother was replaced on Eldorado's board by W. P. James, who also serves as vice-president of the uranium company. James is a director in a dozen private mining corporations. Among his most significant connections is his membership on the board of Yellowknife Bear Mines, Ltd., which he joined in 1948 when that company was formed in a reorganization of mining firms active in the Northwest Territories. In the following year, James became vice-president of the new company, and R. T. Birks, another Eldorado director associated with La Bine in common mining ventures, was brought on the board.

The Bear group of companies operates in a region which has become the center of a new rush for uranium and other minerals. In the last six months of 1948 some 2,300 mineral claims were registered in the Yellowknife region, on the north shore of the Great Slave Lake.

Furthermore, the Bear company has a substantial stake in uranium mines now being developed in the vicinity of the Eldorado property. In the reorganization of 1948, the new Bear company took over the group of mines formerly held by the Bear Exploration & Radium Co., Ltd., and its subsidiary, Yellowknife Gold Mines. At the same time the uranium claims were turned over to a former subsidiary, International Uranium Mining Co., Ltd., in which the new Bear company retained a substantial interest. International Uranium has a pitchblende mine at Contact Lake, some eight miles southeast of the Eldorado mine, where it holds rights to 1,200 acres of pitchblende formation. This corporation is now said to be the most important company, next to Eldorado, active in the older uranium region of Canada.[3] It once boasted among its directors Hon. W. H. McGuire of Toronto, a Dominion senator.

The connection between Eldorado and the Bear companies is of long standing. Carl B. French, a former secretary-treasurer of Eldorado when it was a private company as well as during its first years as a crown company, held the same post for a time in Bear Exploration & Radium, Ltd., and was also director of International Uranium. American capital was invested directly in these companies, and after the reorganization of 1948, a number of Americans remained on the boards of the resulting corporations.*

Yellowknife Bear Mines, Ltd., which as we have seen has two directors in common with the Dominion-owned Eldorado uranium monopoly, is linked through common minority stock interests with Giant Yellowknife Goldmines, Ltd. (not to be confused with Yellowknife Gold Mines which was merged into the Bear company in 1948). This important mining enterprise of the Northwest Territories is controlled by Ventures, Ltd., a central holding and development company with extensive mining interests in Canada, as well as important undertakings in the United States, Africa and Europe. Ownership control of this group is apparently held by Thayer Lindsley of New York, president of Ventures.

The Ventures enterprises in Canada, the United States, and Africa are engaged actively in the drive for control of raw materials, especially uranium, and also in the American atomic industry. Its Canadian mining subsidiaries are in on the uranium rush. One of these, White Eagle Silver Mines, Ltd., has mineral claims in the pitchblende area of the Great Bear Lake. Ventures' principal development subsidiary, Frobisher, Ltd., carries on exploration for uranium and other minerals throughout Arctic Canada. Graphite, which is used in atomic reactors, is mined by still another Canadian affiliate. International Titanium, Ltd., also a Ventures company, has an Australian refinery for monazite, the sand which contains thorium. Ventures-controlled Metal Hybrides, Inc., from its plant at Beverley, Massachusetts, supplies refined uranium metal to the atom bomb business, and is also the only fabricator of thorium metal in the United States besides West-

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Birks, another director of Eldorado, is president of Howey Gold Mines. A general manager of this company is a partner in Fraser D. Reid's firm of mining engineers, Flutterer & Reid of Toronto. Reid is also a director of National Life Assurance Co. of Canada.

* F. B. Erwin of Albany, who was a director of the old Bear Exploration & Radium Co., is on the board of International Uranium. H. Robert Swanson of New York, who was a director of both predecessor companies, remains as director of the new Yellowknife Bear Mines, Ltd. French appears to have been connected mostly with American interests. After the atom bomb project got started in the United States he organized together with Boris Pregel, another former official of Eldorado and an American citizen, the Canadian Radium & Uranium Corp., which supplied uranium oxide to the Manhattan District. French and Pregel also organized International Rare Metals Refinery, Inc., which processed uranium ore for the American atomic project. Later, Eldorado brought suit against French and his associate for taking away its business. Boris Pregel and his brother, Alexander Pregel, president and vice-president respectively of Canadian Radium & Uranium Corp., organized in 1946 the Consolidated Caribou Silver Mines, Inc., to exploit the uranium possibilities of an abandoned mine near Boulder, Colo.

inghouse. Ventures has joined full force in the postwar drive for control of African mineral resources, being engaged in various mining enterprises in Southern Rhodesia, Uganda, and French Morocco.

In the complex corporate structure of present-day imperialism, even a monopoly grouplet of sizable dimensions cannot hope to remain "independent" for long, especially when engaged in a variety of enterprises impinging upon realms already dominated by the major trusts. And Ventures is no exception. In its Canadian undertakings, Ventures came up against the two peak mining monopolies that control the Dominion's metals: International Nickel Co. of Canada, Ltd., and the Consolidated Mining & Smelting Co., Ltd. And it had to give way.

Among the properties of Ventures is the Falconbridge Nickel Mines, the only more or less important Canadian producer except International Nickel of the metal which the latter company controls on a world scale. Apparently, in return for a bloc of Ventures stock,[4] International Nickel has allowed this company to export its metal ore to a Ventures-owned refinery in Norway, and from there it is permitted to sell nickel to a portion of the European market.

Consolidated Mining & Smelting, which ramifies throughout Canadian mining, has a more direct hold upon Ventures. Thayer Lindsley, president of Ventures, is on the board of Consolidated, which manages a number of his mining enterprises. One of the more important recent joint undertakings of the two companies is the exploration of a 500 square-mile concession on the southern shores of Great Slave Lake, where new deposits of lead, zinc, and silver were discovered.[5]

As we have seen, the Eldorado directors are part of a chain of interlocking boards and joint interests by which Eldorado is linked with private uranium-mining companies and brought within the orbit of the major Canadian mining trusts.

In addition to these multiple connections, Eldorado is directly linked with the peak monopoly group of the Canadian economy. John A. MacAulay of Winnipeg, director of Eldorado and one of the old-time associates of La Bine in other mining companies, is on the board of the Bank of Montreal, the only corporate giant directly represented on Eldorado during its period as a private as well as a crown company. The Bank of Montreal is part of the same closely integrated monopoly complex to which International Nickel and Consolidated Mining belong.

We now come to the real forces controlling Canadian minerals, including uranium.

The Nickel Trust

Early in 1948 the Canadian Atomic Energy Control Board, following the example of the U.S. Atomic Energy Commission, set up an Advisory Committee on Mining and Exploration. With one exception, its members were drawn from the mining corporations.

Of particular interest is the chairman of the Advisory Committee, who is also a member of the Atomic Energy Control Board. George C. Bateman has been associated with the mining industry of Ontario for over three decades.* Ontario accounts for about half the mineral production of Canada, and is dominated by International Nickel, which controls the fabulously rich Sudbury basin.

It will be recalled that shortly after Donald H. McLaughlin was appointed chairman of the A.E.C. Raw Materials Advisory Committee, he was made a director of International Nickel. Bateman's appointment to the corresponding post in the Dominion gives the nickel trust a unique position of influence within both government agencies controlling uranium in the United States and Canada.

With assets of over $300 million, the nickel trust ranks among the top world corporations, exceeded in non-ferrous mining only by the Anaconda and Kennecott copper companies. And it commands the world output of nickel. Since the early thirties its mines in Ontario, where it has the mineral rights to about 100,000 acres, accounted for 70 to 80 percent of world production.† International Nickel is also an important producer of other metals, its copper production accounting for about seven percent of world output, sufficient to make the corporation a force in the allocation of world markets among the copper trusts.

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* After working for various mining companies as an engineer in Canada, the United States, and Mexico, Bateman served as general manager and director from 1915 to 1924 of the La Rose Mines at Cobalt, Ont., during that period a leading silver producer controlled by American capital. He then became secretary-treasurer of the Ontario Mining Association, the most powerful mining cartel in Canada, remaining at this post until his appointment to the Atomic Energy Control Board.

† The monopoly extends from the mining of the ore, through refining, processing into rolled metal, and distribution. For twenty years the trust kept the price of nickel at 35 cents a pound, in crisis or boom, raising it to 40 cents in 1948, and even higher as war preparations mounted.

Furthermore, International Nickel is actively expanding its operations in the scramble for control of strategic raw materials. In 1945 it acquired mineral rights to important nickel and other ore regions in Venezuela. According to the report of the corporation's president in April 1948, about $1 million was being spent annually on intensive exploration for minerals in various parts of the world. In 1947 International Nickel began an airborne magnetometric reconnaissance of Canada to locate ores, and by the spring of 1948 the survey had been completed for the entire Sudbury basin, the Porcupine area, and several regions in Manitoba.

International Nickel owes its monopoly position primarily to the wars and war diplomacy of the past three decades. The steel industry is the chief consumer of nickel, using about half the world supply. The metal boomed when the value of nickel-steel for armor plate was demonstrated and its use was ordered by the U.S. Navy on the eve of World War I. Prospering under the demand for nickel-armor during the first World War and absorbing independents, International Nickel emerged as the dominant company in the field. One of the big scandals of the war was the revelation that during the period of American neutrality nickel mined in Canada and refined in the United States was finding its way to the German war machine through the Scandinavian countries. As a result of great public indignation, the corporation finally was forced to set up a refinery in Canada.

With the merging of Imperial Chemical's subsidiary, Mond Nickel, into International in 1929, the present world monopoly was completed. This merger also brought International Nickel fully into the cartel arrangement with I. G. Farbenindustrie for the supply of nickel to Germany. As late as 1937, International Nickel and I. G. Farben made a new agreement allocating additional metal to the Nazi arsenal. According to an anti-trust suit brought by the Department of Justice against the nickel company in 1946 (and dropped two years later on the meaningless promise that the metal would be sold to competitors at the same price as to subsidiaries), the trust had maintained since 1928 together with German and French companies a monopoly agreement for limiting world production, fixing prices, and allocating sales in world markets.

John Foster Dulles conveniently overlooked this record, as well

as other deals with which he was connected, when he denied heatedly during his unsuccessful 1949 campaign for senator from New York that he had participated in cartel arrangements with Farben. As a partner of the law firm which served for more than 25 years as legal counsel to the trust, Dulles would have had a difficult time proving his innocence.

If International Nickel benefited from both sides during preparations for World War II, it failed during the first years of the war to expand production to meet the needs of the Allies. A serious shortage of the metal persisted through 1941, and was overcome only when the Dominion government allowed the corporation to write off against taxes within five years the $25 million invested in expansion.

According to the president of the Toronto Stock Exchange, International Nickel has paid out $450 million since it began operations, half to American shareholders.[6]

Such is the trust that dominates Canadian mining, and is now reaching for control of world uranium.

In a very basic sense this trust represents within itself the condominium of U.S.-Anglo-Canadian interests operating in the diplomatic as well as the economic sphere as the core of the new war alliance.

International Nickel is more a combine than a trust, in the sense that it is ruled by a number of peak monopoly groups, rather than by a single monopoly center. Within this combine, American finance capital is dominant.

Here are to be found the world's most powerful monopoly groups —Morgan, du Pont, Rockefeller, Mellon, and Imperial Chemicals of Britain. Among them, the Morgan, du Pont, and Imperial Chemicals interests—which are also engaged jointly in other enterprises—probably control Nickel. But the Rockefeller and Mellon groups, working in alliance, have recently increased their influence within the trust, as part of their expansion into the field of strategic metals in general.

The Morgan group is represented by a director of Hudson Bay Mining & Smelting Co., which it controls through Newmont Mining Corp.* Morgan's influence is also felt on the board through directors of Canadian subsidiaries of such American corporations as General Electric and the Bell telephone system, or of Canadian companies where the Morgan interest is predominant, like the steel concerns.

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* Direct Morgan influence on the board was increased in July 1951, when two new directors were added: I. C. Raymond Atkin, vice-president, director, and a member of the executive committee of J. P. Morgan & Co., Inc.; and Lewis W. Douglas, of the Phelps Dodge-Morgan combination, who had resigned as U.S. ambassador to Great Britain the previous November.

The du Pont group is represented by Canadian directors of General Motors, and through Canadian Industries, Ltd., which is jointly owned by du Pont and Imperial Chemicals. Du Pont's position is fortified on the one side, by traditional connection with the Morgan interests, and on the other, by association over a long period in the world chemical cartel with Imperial Chemicals, whose Lord McGowan is a director of General Motors.

Following the merger of the Mond company with International Nickel, the British chemical trust gained a strong position in the combine. Four of the five British directors of Nickel represent Imperial Chemicals, and the other is a director of General Electric, Ltd (England), in which the United States G.E. firm has substantial interests. The I.C.I. directors of Nickel are also on the boards of Lloyd's and Midland, the powerful British banks.

Laurance S. Rockefeller, a director of Chase National Bank, has since 1947 directly represented the interests of his family group on the board.* The Rockefeller influence is fortified on the board and the executive committee by a director of Mellon-controlled corporations.

The Rockefeller influence is also strengthened by the role of Dulles' monopoly grouplet. Out of deference to the public proprieties, Dulles resigned as a director of Nickel in April 1950, when he was appointed by President Truman as the Republican Party's special adviser to the State Department. But his place on the board was immediately assigned to George C. Sharp, a member of Dulles' law firm of Sullivan & Cromwell, thus continuing the unbroken connection of this firm of cartel lawyers with the nickel trust. One of the founders of the firm, William Nelson Cromwell, was a director of Nickel until his death in 1948. Dulles had served along with Cromwell as Nickel director, taking over the active duties of chief legal counsel along with the senior partnership of the law firm as the founder ailed.

A constellation of interests, centered around Dulles, and playing an important role in Nickel, generally moves within the broader

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* This position is bolstered by increased holdings of Nickel shares. In addition to 50,000 shares held by the Rockefeller Foundation, the scion of the clan now on Nickel's board has increased his personal holdings during the past few years until they stood at over 32,000 shares by the end of 1949, according to a report of the Securities and Exchange Commission.

Rockefeller sphere. Cross-directorships among corporations in which Dulles and others connected with Nickel are directors suggest such a grouplet, including at least four members of Nickel's board.* In any case, Dulles is well appreciated in the inner Rockefeller sanctum. On his resignation from Nickel, he was named chairman of the board of the Rockefeller Foundation, where he had been a trustee since 1935.

The broad corporate connections maintained by the chairman of Nickel reflect something of the combination of interests gathered in the trust. For example, Robert C. Stanley is on the boards of the Morgan-controlled U.S. Steel and General Electric. He is also a director of Chase National Bank, the central financial institution of the Rockefeller empire, and sits on the board of Mutual Life Insurance, which the Rockefeller and Morgan groups control between them. He is a director of Canadian Pacific, a peak monopoly, in which Imperial Chemicals is also represented. Each of these corporations has assets of over a billion dollars. Among his "lesser" ties is Babcock & Wilcox, one of the companies in the Dulles-Rockefeller constellation.

As among the American, British, and Canadian interests in Nickel, the American share is the greatest. At the end of 1937, the latest date for which such information is available, 46 percent of Nickel shares was held in the United States, 32 percent in Britain, and 18 percent in Canada.[7] The Canadian holdings were the most widely dispersed, and carried the least weight. British shares were held almost solidly by Imperial Chemicals, while the chief American holdings were divided among the groups participating in the trust. In view of the steady advance of American monopoly into the Canadian economy, it may be assumed that the share held in the United States is now much greater.

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* In addition to his post on the board of Nickel, Dulles was a director of the Bank of New York, American Banknote Co., Babcock & Wilcox Corp., and American Agricultural Chemical Co. After his appointment to the State Department in 1950, Dulles' place on the board of Babcock & Wilcox was taken by Goddard M. Stevens, a partner of Sullivan & Cromwell, and similar substitutions were made in the other companies. John C. Traphagen, a Nickel director, is president of Bank of New York, and a director of Babcock & Wilcox and American Agricultural Chemical. Traphagen is associated with a number of insurance companies along with the Rockefeller group, and the bank of which he is president administers real estate holdings of both the Rockefeller and Morgan circles. Like Dulles, he has been a long-time director of Rockefeller "philanthropic" organizations. John F. Thompson, who became president of Nickel in 1949, is also a director of Bank of New York and American Banknote, while Robert C. Stanley, chairman of Nickel, is a director of Babcock & Wilcox. Another director of Nickel—Andrew V. Stout, special partner of the Wall St. firm of Dominick & Dominick—is a director of American Banknote.

The composition of Nickel's board in 1950 leaves little doubt that American monopoly groups hold the dominant position. Of the 25 directors, 12 reside in the United States, five in Britain, and eight in Canada. Five of the Canadian directors are associated with Morgan and du Pont enterprises. The executive committee consists of seven Americans and two Canadians, while the advisory committee has three Englishmen, two Canadians, and two Americans. The executive and financial offices of the corporation are located in Wall Street.

As befits a trust embodying the core of the new war alliance, the board shines with financial and political luminaries. They include Lords McGowan and Melchett (until the latter died in 1948) at the very apex of British monopoly, fully at home with either Tory or Laborite governments. Hardly less a personage is Viscount Weir of Eastwood, a Scottish banking lord, in both wars a member of government military production boards, and economic adviser to British occupation authorities in Germany after World War II. Sir William T. Griffiths is a leader of the most powerful British trade associations. Viscount Margesson of Rugby will be remembered as Captain David Margesson, Tory whip in the House and leader of appeasement during the preparations for the recent war.

A quartet of Canadian directors stand at the very apex of the monopoly structure of the Dominion, supplying the link with the big-three billion-dollar banks and the United States corporations.

Finally, there is John Foster Dulles, the supreme cartel politico, excelling in the art of negotiating among monopoly groups. As head of Sullivan & Cromwell he inherits the tradition of a firm which had helped to organize U.S. Steel and the Standard Oil trust and engineered the Panama Canal steal for Theodore Roosevelt and the elder Morgan. After World War I, the firm helped to build the new cartel network, and Dulles as partner brought together the German and American cartelists during the entire period of preparations for World War II. During that conflict he remained politically an "isolationist" and appeaser, until together with Thomas Dewey in 1944 he turned "internationalist," or in other words, an expansionist of the first water. Dulles, who boasts that he initiated the "cold war" in 1945 at the very first conference of foreign ministers in London,[8] became a prime mover of the new war alliance, at home in the highest circles of both the Democratic and the Republican parties.

14. Canadian Oligarchy

INTERNATIONAL NICKEL'S ROLE in the control of Canadian uranium arises basically from its close association with the peak monopoly group in the Dominion. We have seen how Eldorado is linked directly to the Bank of Montreal. This brings the crown company owning the most important uranium mines of the western hemisphere into the corporate complex headed by the group to which Nickel distinctively belongs.

The Montreal Triad

The Bank of Montreal, Canadian Pacific Railway, and International Nickel stand at the apex of the Canadian monopoly structure. This triad of giant corporations dominates decisive sectors of Canadian industry and mining, including the Canadian branch of the atom bomb business.

The banking institution of this group is one of the big-three banks of the Dominion, itself boasting total assets of over $2 billion. With assets only slightly less, Canadian Pacific is the largest non-financial corporation in Canada. It has been intimately linked with the Bank of Montreal since the inception of the transcontinental railroad, and it has currently seven directors in common with the bank. Canadian Pacific's principal subsidiary is Consolidated Mining & Refining Co., Ltd., which it controls through ownership of 51 percent of the capital stock. Consolidated is the biggest mining corporation in the Dominion except International Nickel. It is closely held within the Canadian Pacific and Bank of Montreal combination not only by stock ownership but also by cross-controls. Canadian Pacific has eight directors in common with Consolidated, while the Bank of Montreal has five.

International Nickel is closely knit into this combination by common interests and multiple attachments deriving from a long historical connection, dating back to the 1880's when the nickel-copper deposits of Ontario were developed in connection with the building of the railway. Nickel now has four directors in common with Canadian Pacific, three with Consolidated, including its president, and two with the Bank of Montreal. This triangle of peak corporations ramifies out widely into the Canadian economy.

With 500 branches, the Bank of Montreal is a force throughout the Dominion in enterprises of all types. The Canadian Pacific Railway traverses key industrial and mineral regions, and operates many enterprises, including air and steamship lines, hotels, and telegraph systems. Through possession of 25 million acres of land received by grant from the British Crown, Canadian Pacific controlled the most valuable mineral rights. It used this monopoly to build up Consolidated, while gaining a foothold in many other mining companies by lease of mineral rights and by direct stock ownership.*

Canadian Pacific's giant mining subsidiary is the largest world producer of lead and zinc, second in silver, and important in many other minerals. Consolidated's Sullivan Mine at Kimberley, British Columbia, has long been famed as the largest lead-zinc producer in the world, and as the scene of militant strike struggles. The company's refining and processing center at Trail, near the American border, which produces important chemical by-products, is the site of the heavy-water plant constructed during the war to supply the American atomic industry. Consolidated carries on extensive exploration for new ore deposits, often in conjunction with other companies. In addition to numerous mineral claims elsewhere, Consolidated has staked out claims adjoining the Eldorado uranium mine at Great Bear Lake.

Between them, the Bank of Montreal and Canadian Pacific (including the mining subsidiary) maintain an extensive network of cross directorships with other leading corporations. Their directors are on the boards of over 70 industrial companies incorporated in Canada, not counting numerous subsidiaries and scores of mining firms. These include the three major steel companies, the Bell communications system, the largest three metal refiners, two of the big three dominating the newsprint and paper industry, the top producers of electrical equipment and machinery, and leading enterprises in the food, textile, power, lumber, glass, and other industries.

* Canadian Pacific still derives lucrative profits from the original land steal, not only in the form of royalties from older concessions but also from new leases. A recent example comes from Alberta, center of the big oil rush, where the Canadian Pacific granted exploration rights to Socony-Vacuum and Sun Oil Co. on part of its landed domain.

In addition, the directors of Canadian Pacific and Bank of Montreal are on the boards of two score financial and investment companies, which in turn control numerous enterprises. Having six directors in common with the billion-dollar Sun Life Assurance Co., Ltd., this group plays the leading role in the Dominion's largest insurance company, and also controls the top-ranking Mutual Life Assurance through an equal number of cross-directors. It has a director in common with Canadian Bank of Commerce and Bank of Canada, which with the Bank of Montreal constitute the big three in Canadian finance. Other big banks are represented by at least one director on the Bank of Montreal or Canadian Pacific. There is hardly an important investment trust or insurance company that does not maintain connections with these corporations.

The Montreal combine is also linked by common directors with the home corporations (as distinct from the Canadian branch companies) of giant world trusts and banks. These include, in Britain: Imperial Chemical Industries, Vickers, Amalgamated Metal, and Baring Bros.; in the United States: General Motors, General Electric, U.S. Steel, Metropolitan Life, Mutual Life, and Chase National Bank. It is connected with the principal Anglo-American trusts operating in Canada —International Nickel, American Metals, Ltd., and Canadian Industries, Ltd.

Together with Bank of Montreal and Canadian Pacific, International Nickel stands at the center of this corporate structure, which is Canadian only in the sense that it operates in the Dominion's economy. The Montreal group has long since lost its historically paramount and practically exclusive tie to British monopoly, which in earlier years had made it meaningless to speak of a monopoly grouping distinctly and autonomously Canadian in the national sense. The penetration of American monopoly capital into Canada during the period of greatest industrialization and mining expansion hastened the trustification of the economy, and moreover brought it full pace within the orbit of the corporate structure of the United States. In this process, even distinctly Anglo-Canadian capital, involving major British monopoly groups, was increasingly brought into the Canadian domain of the Wall Street trusts. "Home-controlled," a phrase often used to characterize certain Canadian enterprises as predominantly controlled in the Dominion, has little meaning when applied to the decisive sectors of monopoly in that country.

The Montreal group illustrates the process of intermingling of monopoly capitals, along with sharp inner struggles for control, which has been going on in Canada. Historically, the British were the prime force behind the Bank of Montreal and Canadian Pacific. The Bank is one of the oldest financial institutions in the western hemisphere, having been established in 1817, when Canada was still a colony. The British also financed the central enterprise of the latter part of the nineteenth century, the Canadian Pacific Railway. In the construction of the road rich mineral resources were discovered, contributing to the swift development of the Anglo-Canadian monopoly. While in the East, as in Ontario, these resources were developed largely with the aid of American capital, in the West the mineral resources came for the most part under the control of Anglo-Canadian companies. With the formation of Consolidated in 1906, as a merger of the extensive mining and refining enterprises of Canadian Pacific, principally in British Columbia, the main pillars of the central edifice of Anglo-Canadian monopoly has been erected.

Canadian Pacific remained the largest Canadian enterprise controlled by the British. Up to World War II, British interests were overwhelmingly predominant. Thus, in 1934 they controlled 66 percent of the voting stock, Americans 17 percent, and Canadians 12 percent. The American shares consisted chiefly of holdings in the extensions of the Canadian Pacific road into the United States.[1] As a result of the forced sale of British holdings in Canada* and the United States during the war, the predominant British position in this company has been reduced, and the American position strengthened, but the extent to which the relations were altered is not known. The greatly swollen bloc of Canadian bonds and other securities now held by American interests may indicate a substantial inroad upon the old British position in Canadian Pacific.

Continuing British influence, perhaps still predominant, in Canadian Pacific is indicated by the presence on its current board of two top British monopolists. One is Sir John Anderson, a director of Imperial Chemicals and Vickers, Chancellor of the Exchequer in Churchill's war time cabinet, and chairman of the U.K. Committee on Atomic Power until its dissolution in 1948. The other is Sir Edward R. Peacock

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* An example of forced British sales of Canadian securities is the transfer in September 1941 of 56,943 shares of Consolidated from British to unspecified interests in Canada.

director of the London banking investment house of Baring Bros. On the other hand, no British group is today directly represented on the board of the Bank of Montreal, although it has a London branch headed by Sir Hardman Lever. Directors of Canadian Pacific and Bank of Montreal maintain many connections with Anglo-Canadian enterprises in insurance, mining, and commerce.

This major stronghold of British monopoly in Canada could not withstand the constant encroachments of American monopoly upon the most important sectors of the economy. Today, it is no longer possible to speak of the Montreal monopoly center as exclusively a nexus of British capital in Canada. The sheer weight of American capital expansion into the economy, which was at the same time a breaking down from the inside of the major centers of Anglo-Canadian monopoly, inevitably brought about a change in corporate relations within the Montreal group, in favor of the American interests. The directors of the Bank of Montreal and of Canadian Pacific and its mining subsidiary were increasingly identified with the principal American trusts whose affiliates operate in Canada. About one-third of the 75 industrial and utility enterprises with which these directors are associated are branches or subsidiaries of American corporations, operating in the most vital and also most trustified sectors of the economy.* Still other firms starting out with primarily Canadian capital or as Anglo-Canadian enterprises have become increasingly American.

The transformation of Anglo-Canadian capital into U.S.-Canadian and U.S.-Anglo-Canadian capital is personified by two top monopolists of Canadian nationality, identified with the Montreal group and the Nickel trust. Ross H. McMaster, chairman of the board of Steel Co. of Canada, has the unique distinction of serving on the boards of three peak billion-dollar corporations: Bank of Montreal, Canadian Pacific, and Sun Life. He is also a director of the two top mining monopolies: International Nickel and Consolidated. In addition, he sits on the boards of Canadian Industries Ltd., the Imperial Chemicals-du Pont combine, and two American branch firms—Pratt & Whitney Airplane Engine and Northern Electric.

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* These include General Motors of Canada, Bell Co. of Canada, Canadian General Electric, Goodyear of Canada, Canadian International Paper, Dominion Rubber (subsidiary of U.S. Rubber), Pacific Mills (subsidiary of Crown Zellerbach Paper), Worthington Pump & Machinery, U.S. Hoffman Machinery, Canadian Pratt & Whitney, and others.

The so-called "home-controlled" Steel Co. of Canada has five directors in common with the Bank of Montreal and also four with the Bell Co. of Canada.

In his activities as a corporate director, R. Samuel McLaughlin represents the interests simultaneously of International Nickel, Canadian Pacific, and Consolidated. A true cosmopolitan, he finds time in addition to his duties as chairman of the board of General Motors of Canada, to serve as vice-president of General Motors (U.S.A.) and as director of Canadian General Electric.

With "Canadians" such as these at the apex of the national economy, it is not surprising that the rich resources of the country are so easily relinquished to Anglo-American monopoly. National sovereignty has little meaning to men for whom national borders are a device for division of markets. When the American expansionists speak of sacrificing areas of national sovereignty in connection with the Baruch Plan or the Atlantic Alliance they speak a language close to the hearts of their fellow cartelists. For a long time the Canadian financial oligarchs have been accustomed to send a major portion of the capital accumulations derived from Canadian labor and great natural wealth to The City and Wall Street. The ultimate is now reached by the rapid depletion of the Dominion's uranium resources, which could be used for the development of the home country, in order to stockpile nuclear explosives in the United States.

In sum, the characteristics of the particular monopoly complex of which Eldorado is part are such as to permit the control of Canadian uranium by American monopoly operating through the corporate structure with which International Nickel is associated most directly.

Wall Street's Dominion

Fundamentally, the control of Canadian atomic ores, those already being mined and such as may be discovered in the future, is assured by the over-all domination of Canada by the United States, economically and politically. This must be seen at least in its essential outlines to understand fully how the complex of mixed government and corporate controls operates to drain atomic ores from the Dominion for munitions and to bring Canada fully into the new war alliance.

The Canadian economy has become the most important projection of the American corporate structure abroad. More American capital is invested in Canada than in any other foreign country. According to the most recent comprehensive census of foreign investment,[2] American holdings in Canada during the war already totaled $4.4 billion, equivalent to the American investment in all European countries combined, and more than four times the United States investment in either Germany or Britain—since World War I the main countries of American investment in Europe.

In addition to Canada's being the prime recipient of capital outflow from the United States, the nature of the investment is such as to link the principal Canadian enterprises very securely to financial centers in this country. Holdings in the United States of Canadian bonds and securities, as distinct from direct investments in Canadian enterprises, account for 64 percent of the value of foreign securities of all countries held in the United States. Representing more than half the total American investment in the Dominion, the bulk of these bond holdings are the securities of Canadian corporations, and only 27 percent are government bonds. Furthermore, the Canadian bonds are more highly concentrated in the hands of the American financial corporations than are other foreign securities held in the United States. Of all Canadian bonds owned in the United States, 65 percent are held by corporations, with insurance companies the most important, followed by banks and investment companies.

This characteristic of U.S. capital in Canada facilitates its penetration into traditionally Anglo-Canadian enterprises like the Canadian Pacific Railway, and speeds along the centralization of control over broad economic sectors by the peak monopoly groups of the United States.

Direct investment in Canadian companies controlled by United States corporations (through ownership of more than 25 percent of the voting stock), amounted in 1943 to $1.7 billion, or about 40 percent of the total American investment in Canada. This is triple the direct investment by United States capitalists in any other country. Capital from the United States is principally in manufacturing (almost half of the total direct investment) followed by finance, minerals, public utilities, and transport. Admittedly, these figures are understatements, since they exclude the American investment in companies incorporated abroad but doing business in Canada, and also other enterprises in which American participation is less than 25 percent.

The 2,100 subsidiaries and branch plants of American companies in

Canada far exceed the number in any other country. Moreover, these firms and subsidiaries branch out into some forty countries. Canada is thus among the most important bases outside the United States for the penetration by American monopoly capital of the world economy and particularly the British Empire sphere.

Concentration of control by American monopoly is facilitated by the usual methods, including domination of the boards and managements of the Canadian companies. In Canadian companies controlled by American capital, 65 percent of the directors and 70 percent of the executive officers are American citizens. Patent agreements play a similar role. The United States companies covered in the wartime survey reported 790 patent agreements with firms in Canada, making up more than one-fourth of all such agreements with companies abroad, which is more than with any other country.

Under the impetus of war and the postwar expansionist drive of the American trusts, investments from the United States continued to mount. According to the Dominion Bureau of Statistics, the total United States investment in Canada reached $5.9 billion by the end of 1949, an increase of almost $2 billion since the beginning of World War II. By 1947, direct investments in enterprises in the Dominion stood at $2.5 billion, more than double pre-war.[3] Far from showing signs of abatement, the American corporate expansion into Canada, particularly in the drive for strategic raw materials and in the extension of war industry, assumes greater impetus. In 1950 alone, it is estimated, new American investment in the Dominion amounted to $1 billion, more than during the four years 1946-49.

While American monopoly capital continued its relentless march into Canada, British capital was engaged in a forced retreat. The weakening of the British position in Canada had proceeded for some time before the war. Already by 1939 the American investment was almost double the British. The war accelerated the dispossession of the British in Canada, as they were forced to sell their holdings to both Americans and Canadians. During the war period—between 1939 and the end of 1945—the British investment in Canada had declined from $2.5 billion to $1.7 billion, or by one-third, while the American corporations were adding to their investments an amount about equal to the British losses. By the end of 1947, the British investment had declined another $100 million, despite the efforts of British trusts to recoup their wartime losses.* But by 1949, the British showed signs of revival. In that year their investment increased by $150 million, reflecting the establishement of branch plants in the Dominion.

Following World War I, the United States corporations began to take over the commanding positions of Canadian industry on a broad front as they started an avalanche of branch plants into the Dominion. By 1939, corporations with home offices in the United States already controlled one-third of the total investment in Canadian manufacturing industry, while the British accounted for only five percent.[4] Most of the new American investment in Canada during World War II and immediately after went into the manufacturing industries.[5]

American monopolies control even a larger share of the mining industry. On the eve of the war, 38 percent of the total investment in Canadian mining was owned in the United States.[6] Since the first World War both British and American investment had been growing, while the share of Canadian investors had been declining.†

At the rate at which this tendency has proceeded in recent years, the share of the Canadian mining industry controlled directly in Wall Street may soon exceed the combined Anglo-Canadian sector. This tendency toward complete domination of Canadian minerals by American monopoly is greatly facilitated by two important factors. The United States is the greatest market for Canadian minerals, consuming, for example, over 90 percent of the nickel output of the capitalist world which comes mostly from Ontario. Canadian mining and refining equipment is almost entirely of American design, manufactured either in the United States or by Canadian subsidiaries, thereby assuring control of patents and processes to the parent monopolies.

World War II was followed by a wave of expansion of American corporations into Canadian mining, stimulated by the crusade for strategic materials, and exceeding in extent even the development of the war period. In full support the Canadian government granted tax exemptions on new mines, and juicy allowances for exploration. The boom was sparked by the search for uranium, with practically every major mining combine establishing claims. Some have already been mentioned, including Consolidated, Ventures, and Nickel. One of the most spectacular finds of 1948 was the discovery of a pitchblende vein 75 miles northwest of Sault Ste. Marie, where a subsidiary of Jones & Laughlin Steel Co. of Pittsburgh established claims. Another U.S. company, Molybdenum Corp. of America, acquired two uranium ore properties in the Mattawa area in 1949. Uranium claims in Saskatchewan were acquired by a new company, American-Canadian Uranium Ltd., headed by Paul V. McNutt, the former governor of Indiana and recent ambassador to the Philippines.* Often the uranium hunt led to the discovery of rich deposits of other strategic materials, such as the zinc and lead field at the Great Slave Lake in the Northwest Territories, where Consolidated Mining and Hollinger Consolidated Mines, Ltd. obtained control. This is the largest gold producer in Canada and American interests play a prominent part in it.

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* According to a study of overseas investment issued by the Bank of England in October 1950, Britain's capital investment in Canada dropped 61 percent in the ten years 1938-48. This finding is disputed by Canadian authorities who claim the real decline was only about one-third. (*Financial Post*, Toronto, Oct. 31, 1950.)

† Between 1921 and 1934, the percentage held by Americans of securities issued by companies in the Canadian mining industry increased from 30.4 to [illegible], and the British from 13.2 to 22.7, while Canadian holdings declined from [illegible] percent to 44.4 percent. These can be considered only approximate ratios, since Canadian citizenship often hides foreign interests. Actually, both the American and British percentage is higher, and the Canadian considerably less.

In this scramble for strategic minerals the steal by American trusts of Alberta oil and Ungava iron surpasses other wholesale raids upon Canada's natural wealth, unless it be the seizure of the Dominion's uranium. The trust dominating the new oil field is Imperial Oil, Ltd., a subsidiary of Standard Oil Co. (New Jersey). According to a top

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* The highly speculative nature of the uranium rush, and the chicanery sometimes involved, may be illustrated by this company, if charges made by the attorney general of New York State are correct. In November 1950, the attorney general announced that the background and stock-selling activities of the company were being investigated to protect prospective purchasers of stock. He revealed that the promoters had taken 2,400,000 shares or 83 percent of the capital stock for themselves at a total investment of $90,098, while the public was invited to purchase 500,000 shares at $1,750,000. In addition, a special underwriting group organized by the promoters of the company put up only $10,000 but would have received a commission of $250,000 from the sale of shares to the public. The stock was offered as a "speculation," no claim being made in the prospectus of the company that the existence of ore on the property had been proved or that commercial possibilities had been established. It was also charged that two principal stockholders of the company were convicted in Canada for fraud in connection with stock manipulation and for violating foreign exchange laws. It is characteristic of the war atmosphere that when confronted with these charges, McNutt defended his company by citing "the vital need of the raw material for national defense." (*New York Times*, Nov. [illegible] 1950.)

executive of the Chase National Bank, the oil trusts intend to invest no less than $1 billion within ten years in their Alberta domain.[7]

Vast iron-ore deposits in the Ungava wilderness of Quebec and Labrador were taken over by corporations from the United States. These deposits are said to rival both in quality and size the depleted Mesabi iron range of Minnesota, and also to contain other valuable minerals, perhaps even uranium. The fields in the Lake Allard region of northern Quebec passed to the Quebec Iron & Titanium Corp. This was formed in September 1948 by Kennecott Copper and New Jersey Zinc, with the former in control. For the first time a copper trust has entered the field of iron ore, previously left to the steel trust. It will thus have titanium which is found in this region in rich form combined with iron in the same ore (ilmenite).

At the same time, the larger deposits in Labrador were seized jointly by M. A. Hanna Co.* of Cleveland (a peak company of the Midwest monopoly group) and Hollinger Consolidated Mines. These rich sources of iron ore are intended for the steel furnaces in this country. Hollinger-Hanna, Ltd., the new company formed to exploit the Labrador fields, completed arrangements in December 1949 to turn over the output of the projected mines to the Iron Ore Co. of Canada, which was formed by United States companies comprising so-called Little Steel—Republic, Armco, Wheeling, Youngstown Sheet & Tube, and Hanna Coal & Ore Corp. The proposed St. Lawrence Waterway, now vigorously supported by the Hanna interests, would assure cheap delivery of the ore to the Midwest mills.

In a protest to the Dominion government, the Nova Scotia District of the United Mine Workers declared that this incursion by the American monopolies and their growing influence in the Canadian steel companies† would result in the wholesale loss of about one-third of the Dominion's iron and coal resources to the United States. As the miners point out, Canada would be deprived of the most essential base for her own heavy industries, her dependence upon the United States would be increased, and even the sovereignty of the Dominion would be threatened.[8]

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* The Hanna interests also own the Steep Rock Iron Mines of Ontario, about [illegible] miles north of Duluth, Minn. They obtained these mines during the war, with the help of a $5-million loan from the Reconstruction Finance Corp. In December 1948, the Export-Import Bank advanced another $5 million to the company to expand operations. Some three million tons of iron ore are expected from this mine, all of which goes to mills in the United States.

† Of the Canadian big three steel companies, Algoma was predominantly under American influence even before the war. (Moore, *American Influence in Canadian Mining*, pp. 50-51.) One of its directors, J. A. Simard, became a director of the joint Hanna-Hollinger company formed to exploit the Labrador iron-ore fields. (It is an interesting coincidence that a former official of Algoma, W. Gemmell, served for a time as secretary-treasurer of Eldorado Mining &

That the flag follows the dollar (or the other way round) is an old maxim, but it is expressed in novel forms. Even as the financial details of the Labrador deal were being worked out by the American barons Newfoundland was transformed in the summer of 1948 from a direct colony of Britain into a member of the Canadian Confederation through the device of a referendum (population: 320,000). Whatever historical forces may eventually operate to make this a natural union, the fact remains that it was done to further the strategic and economic interests of American monopoly capital. During World War II, Newfoundland was turned into a permanent base for control of the North Atlantic by the United States, which maintains one Navy and three Army bases there, while Gander Airport has become the stopping-off point for eight trans-Atlantic lines. Just as pertinent to the change in the political status of Newfoundland is the new-found interest of the Hanna monopoly group in the iron ore of Labrador, which is a dependency of Newfoundland. It was obviously felt that this new monopoly and strategic base could best be controlled through the Dominion government. Besides, the value of Hanna's Labrador properties will be enhanced by an annual subsidy to the new province from the Dominion government of $2.5 million and special grants of $43 million in the next 12 years for internal development, as provided in the confederation agreement.*

Refining after it became a crown company, while John K. Gustafson went to the M. A. Hanna Co. after resigning as chief of the A.E.C. Raw Materials Division.) The Steel Co. of Canada is linked closely to the Montreal monopoly group and to Morgan-controlled Canadian subsidiaries. Dominion Steel & Coal Corp., which controls the Nova Scotia iron and coal mines, has since the war come more within the American corporate orbit. A substantial interest was acquired in this corporation in 1946 by the American Securities Corp. of New York. Charles G. Terry, president of this investment trust and chairman of the finance committee of the Colorado Fuel & Iron Corp., became a director of Dominion. He was joined on the board of Dominion by R. J. Wysor, past president of the Republic Steel Corp.

* Considerable light is thrown on the deal making Labrador the tenth province of Canada in a report on raw materials and the Marshall Plan made November 1947 by the Herter Committee (House Select Committee on Foreign Aid

The Newfoundland incident illustrates what has been occuring on the broad stage of U.S.-Canadian relations. Canada is well along toward becoming an economic dependency of American monopoly capital. This is demonstrated most directly in the extension of the American corporate structure into the Canadian economy as a whole. It is reflected in the trade dependence of the Dominion upon the United States, which now gets two-thirds of all Canadian exports, as compared with one-third before World War II. Canada is also the biggest foreign customer of the United States, and over 75 percent of its imports come from its southern neighbor. Even Canada's trade with Britain became dependent upon the United States, which used Marshall Plan dollars to finance exports from the Dominion to the United Kingdom.

Canada offers an excellent example of the cartel process at the uppermost level where it approaches the merger of British and United States monopoly capitals, within a general relationship in which American monopoly is overwhelming. Canadian monopoly in the national sense exists only as an element in the merger with United States and British or Anglo-American capital. While the British were being displaced, their Canadian "partners" were simultaneously being annexed by the American monopolies, or at best shared with the peak British groups. There are big Canadian capitalists, who have become even bigger with the recent growth of monopoly in the Dominion. A Canadian bourgeoisie rules. But national Canadian monopoly, as an autonomous grouping distinct from American or British sectors, cannot be differentiated. In some consumer-goods industries and in cotton textiles such a distinction can still be made, but as the upper reaches of the oligarchy are approached, the element of fusion becomes more marked. This intermingling of capitals abounds in inner conflicts and con-

This body proposed that Newfoundland either be given Dominion status by Britain or be made a part of Canada "so that participation in these resources [iron ore] be allocated as security against a United States loan to Britain." Other means than a second loan to Britain were found to meet that situation, but the Labrador deal did go through economically and politically. In the referendum no real choice was offered the people of Newfoundland, largely dependent upon fishing for a livelihood. The Confederationists, who favored union with Canada, won by a very small margin. Their chief opponents were the Economic Unionists who favored independence along with an economic agreement with the United States in which American tariffs on fish would be eliminated and in return American capital would be given free entry into Newfoundland on a tax-free basis. Either of these alternatives assured United States domination. Supporters of dominion status were an insignificant minority.

tradictions among the major monopoly groups, each striving for advantage. The British on their part seek to retain what they have managed to hold and to recoup their losses, while certain sectors of Canadian capital seek to benefit as much as possible from the ascendency of the American trusts. But the outstanding tendency is clearly toward complete domination of Canada by the American corporate giants, to a degree never enjoyed by British monopolists. National capital, to the extent that it exists as medium and less trustified capital, may continue to offer resistance and to exploit for its own purposes the rivalry between British and United States monopolies, but the Canadian oligarchy in the main is tending more and more toward integration into the American corporate structure.

The political outcome of this development is seen in the present subordination of Canada to the United States, its submission in the military sense and in the field of foreign policy to the world strategy of American imperialism. This outcome was also the result of the constant buckling under of the British Laborite government to American expansionist policy. The Anglo-American rivalry persists and the Canadian bourgeoisie reflects these conflicting pressures. But under present policies the Dominion cannot lay claim to the position of a "middle world power, as some of its statesmen have held. Canada is in danger of losing to the United States whatever remnants of real sovereignty it has been able to retain.

Accordingly, as a "partner" of the United States and Britain in the atomic bloc, Canada is primarily an instrument of American policy.

15. Control of Congo Uranium

THE RICHEST SOURCE of uranium available to the atom bomb trust is in the Belgian Congo. Here the American monopolists confront a powerful Anglo-Belgian combine, stemming directly from the imperialist freebooters who at the beginning of the century parceled out among themselves the wealth of Africa.

Efforts proceed on a broad front to penetrate this ancient colonial monopoly and to bring Congo uranium fully under control of the American bankers.

Shinkolobwe and Eldorado

Shinkolobwe, situated in Katanga province, is the biggest pitchblende mine available to the western powers. Its ore has a higher concentration of radioactive material than Canadian pitchblende, and also in extent the Congo reserves are believed to exceed the Canadian.

Division of the world market among the members of the pre-war radium cartel indicates the relative importance of the Congo and Canadian mines. Union Minière du Haut Katanga (U.M.), the metal-mining trust which owns the mine, was the leading world producer of radium before the war. When its mine came into production in the early 1920's, the vanadium corporations of the Colorado Plateau were forced out of the radium business. Although the ancient Bohemian mines of Czechoslovakia were still a factor, U.M. dominated the world supply of radium until the mid-thirties, when Canadian pitchblende began to offer strong competition.

By 1938 reports were current of a cartel agreement between U.M. and Eldorado, the company controlling Canadian uranium. According to a later announcement by the Canadian Bureau of Mines, a five-year agreement was said to exist between the two companies for sharing world radium sales on a basis of 40 percent for Eldorado and 60 percent for the Congo trust.[1]

The 60-40 allotment is a very rough indication of the relative role played today by the two chief sources of uranium. That ratio may have changed considerably, with intensive exploitation of the deposits and discovery of new reserves. New mines have been opened in the vicinity of Shinkolobwe,[2] while discoveries apparently of some importance have also been made in Canada. However, there are indications that the Congo mines have become even more significant than they were in comparison with the Eldorado veins in Canada.

In a recent review of uranium exploration, an A.E.C. official expressed the hope that the feverish hunt for new deposits in Canada and the United States would "further reduce our dependence on supplies from overseas."[3]

Unofficial figures on exports of Congo uranium indicate at least a twelve-fold increase in production since before World War II. In 1948, according to a news item from London, Belgian Congo had exported 3,650 tons of uranium ore to the United States in 1946 and 2,600 tons to Britain. If this is correct, it means that by the end of the war the output of uranium ore in the Congo alone was already more than six times as large as the total world production of roughly 1,000 tons before the war. Unofficial reports from Brussels[4] place Congo output for 1949 at 12,000 tons, and this is expected to jump higher when a new ore-processing mill at Shinkolobwe (which was scheduled for completion by June 1950) goes into operation.

It would appear, therefore, that the relative importance of the Belgian Congo as a source of uranium has increased during the recent period. For the monopolies seeking exclusive control of the nuclear weapons business, domination of this source of the prime strategic mineral becomes indispensable.

The Belgian Combine

In their efforts to dominate the Congo mines, the American atomic trusts confront one of the most thorough-going monopolies ever established over a colony. Monopoly control over the resources and labor of mineral-rich Katanga province is complete.

U.M. is the supreme ruler of Katanga. In this province the trust controls one of the leading copper deposits of the world, as well as important sources of cadmium, gold, platinum, silver, tin, and zinc. U.M. subsidiaries produce chemicals, explosives, lignite, power, and

Private finance, transportation, and exploration rights are under its control. The trust builds, supplies, and runs the towns. It governs. "In short," as a summary by the U.S. Department of Commerce says, Union Minière is almost an independent little world."[5]

This colonial trust is one of the many subsidiaries of Société Générale de Belgique, a vast conglomerate of banks, insurance companies, railroads, mines, refineries, steel works, utilities, chemical and textile enterprises, arsenals, and transportation, lumber, diamond, and other undertakings.* Dating from the emergence of capitalism in Belgium early in the nineteenth century, and organized jointly by the royal family and private bankers, this combine grew to gigantic proportions as it reached into practically every branch of economic endeavor at home and in the colonies. On the eve of World War II, the Society accounted directly for one-third of all assets in Belgian banking, and it exerted control through joint participation in a considerably greater sector of finance, which in Belgium had attained a particularly high level of merger with industrial capital. A student of the Belgian banking system remarked: "In the circles of the extreme left the Société Générale was regarded as the representative and the head of Belgian financial capitalism."[6] That would seem to describe it adequately for any circle of political opinion.

Beginning as a private enterprise of the royal family and merchant bankers, the Society became a joint combine of the state and private monopoly when early in the imperialist era, King Leopold II sold his interests at a handsome price to the Belgian government. The Society now represents the most complete fusion of private monopoly and the state, a process which is characteristic of the imperialist era.

The war did not touch the basic position of this giant combine despite the Belgian defeat and the German occupation of the country. In the first postwar year, according to the annual report for 1946, the Society, with its imposing edifice of affiliates, remained practically intact and was able to pay a dividend of five percent.[7] This can no doubt be explained by the fact that while some directors and managers of the Society remained to collaborate with the Germans, others joined the government-in-exile in London. There they could look after their holdings in countries under Allied control, including the Belgian Congo, and safeguard their future interests in the event of German defeat. In any case, the liberation of Belgium from the Nazis failed to liberate the country from the Society.

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* Among these is the refinery at Hoboken, Belgium, which before the war was the largest radium plant in the world. During the war, Congo uranium ore was sent directly to the United States for refinement, but in 1946 at least some ore was again being processed at the Hoboken plant.

The combine is the dominant force in the Belgian Congo. This position was well fortified in the late 1920's when it absorbed the Banque d'Outremer, which held extensive interests in colonial enterprises. Among the four financial groups controlling 75 percent of all capital in the Congo before the war, the Society stands at the peak, accounting for four times the combined capital of the other three. Describing its role in the colony, a Belgian Senate Commission on the Congo declared: "In comparison with the reports of other companies one can say that without the group of Société Générale, economic Congo can be said not to exist."[9]

Most of the mineral wealth of the Belgian Congo is concentrated in Katanga province, which is controlled by the Society's partly-owned subsidiary, Union Minière. The history of this mining trust is at the same time the story of the conquest and partition of Africa among the imperialist powers, which began in earnest during the latter decades of the nineteenth century. While South Africa was being turned into a private empire of Cecil Rhodes, King Leopold II of Belgium through a company under his personal control staked claims to the vast region of the Congo. His "rights" to this territory were recognized at the International Berlin Conference of 1885, where the powers engaged in the looting of Africa marked out their spheres of influence. Shortly afterward, the monarch's private corporation transformed itself into the "Congo Free State," with Leopold as sovereign, and butchered, despoiled, and tyrannized the native peoples for a quarter of a century. In an effort to turn aside the world criticism of his Congo rubber and ivory "terror economy," Leopold turned the domain over to Belgium as a colony in 1908, but the private concessionaires jointly with the colonial regime continued to dominate.

It was during the period of private company rule that U.M. was formed. Leopold parceled out his domain in the form of concessions to special companies set up for the purpose, the monarch usually retaining a half interest in the new monopolies. Among these was the Katanga Co. (Compagnie du Katanga), which in 1891 was assigned exclusive rights to minerals in that province. In 1900 the company transferred these rights to a subsidiary, the Katanga Special Committee (Comité Spécial du Katanga).*

However, the British colonizers were the first to discover the mineral wealth of Katanga. Pushing northward from the South African territories already monopolized by the British, a foraging party hit upon the rich copper fields which extend on both sides of the Congo-Rhodesian border. The exploratory expedition, organized by Cecil Rhodes and Robert Williams, the Englishman who was to play a prominent role in Congo affairs for many years, followed the copper veins into Leopold's private domain. The invasion was led by George Grey, a fact helping to illuminate the subsequent action of Sir Edward Grey, brother of George Grey and British Foreign Secretary, in subjecting Leopold's administration of the Congo to sharp public criticism.[10] This attack played no small role in forcing Leopold, both in his capacity as king of Belgium and as private boss of the Congo, to invite the British capitalists to share in the exploitation of Katanga. Prospecting rights in the province were granted by the Special Committee to Robert Williams' company, Tanganyika Concessions, Ltd. In 1906, U.M. was organized by the Special Committee, Société Générale and Tanganyika Concessions.

The new Anglo-Belgian company received exclusive rights to minerals in an area of 7,700 square miles, which includes the copper deposits extending for about 200 miles along the border with Northern Rhodesia. It also received the mineral rights to all tin resources found in an adjoining area of 5,400 square miles, as well as the rights to build railroads throughout. With imperialist audacity these rights were granted until 1990. Tin did not come to play a role until much later, but copper production was greatly stimulated by World War I, and during the inter-war years the Congo mines came to account for seven percent of world output.

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* The Katanga Special Committee still supervises public domain and has the power to grant concessions. Two-thirds of its stock is held by the colonial government and one-third by private interests, centered in Société Générale, which is itself a joint monopoly-state enterprise. The Special Committee administers about one-third the area of Katanga, issuing permits for mining, prospecting, and forestry, and selling or leasing land to colonists or companies. One of the functions of state ownership in this complex arrangement is to guarantee investment and profits. Under the concessionaire system, the Congo regime guarantees interest or dividends on a portion of the capital invested by the private companies. Up to 1935, the Congo government paid out to cover its guarantee of profits more than 2.6 billion francs; in 1934 alone such payments amounted to 110 million francs. (Frankel, *Capital Investment in Africa,* p. 168.)

A product of the British and Belgian conquest of Africa, U.M. remained under joint Anglo-Belgian monopoly control. When Anglo-American negotiations for new agreements on control of uranium were under way in 1949, the London Foreign Office denied reports that British mining interests owned 49 percent of U.M., claiming their shares in the Congo mining monopoly were considerably less.[11] The exact apportionment of control is difficult to ascertain because of the complex inter-corporate mixed with corporate-government ownership of the mining trust. According to a recent official Belgian source, the Special Committee held from the beginning 25 percent of U.M. shares while Tanganyika held 14 per cent. Voting rights were somewhat differently distributed, with the former controlling 36 percent, and the latter 20 per cent.[12] The latest standard financial manuals report about the same ratios.*

Actually, British control was greater than these data indicate. It is noteworthy that the British government has negotiated directly with the American government on the disposal of Congo uranium. On their part, the Belgium government raised no obvious objections to their exclusion from the joint United States-Anglo-Canadian atomic policy committee, a fact which may also be explained by the role of Marshall Plan payments and other American credits to Belgium. That country has become constantly more dependent upon Britain. Its government-in-exile, which was taken under the British wing, was imposed upon Belgium after the war, together with the entire edifice of monopoly capital with which British interests are intertwined. As with other secondary colonial powers, the maintenance of Belgian rule over the Congo has depended throughout the imperialist era upon British power in Africa. During World War II, when Belgium itself was under German occupation, the Congo became a virtual appendage to the British empire.

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* According to them, the Special Committee in 1950 held directly 21.3 percent of U. M. shares, and was entitled to subscribe to one-fourth of all new capital issues, while Tanganyika Concessions, Ltd., held 12.5 percent of capital stock. But Tanganyika also held 30 percent of U.M.'s bonds, which together with the voting rights of its shares gave Tanganyika a total of 238,624 votes on the board, while the Special Committee had 414,000 votes, an unspecified portion of which had been transferred to Tanganyika.

Enter U.S.A.

The holding company through which the British monopoly groups maintain their interests in the Congo mining trust is one of a crop of colonial companies planted by Cecil Rhodes in South Africa. Tanganyika Concessions was formed in 1899 to prospect for minerals in Northern Rhodesia, under a concession granted by the British South Africa Co., the chartered company used by Rhodes to establish his African empire. With its entry into the Congo, Tanganyika became the principal projection of the British monopoly interests in that part of Africa. Its shares in U.M. are Tanganyika's most profitable assets. It also controls the movement of uranium and other minerals out of the Congo, because of its role in the two railway systems that connect the mining regions with the seaports. It owns the Benguela Railway Co., which provides the only available outlet from Katanga to the Atlantic Ocean, through the Portuguese colony of Angola to Lobita Bay. Tanganyika also financed the Katanga Railway Co., which links the mining area with the Rhodesian railroad system, and thus with the East African ports.*

The most illustrious robber barons of Africa have been associated with Tanganyika. Robert Williams, knighted for his services to imperial Britain, was still a director of Tanganyika and also a vice-president of U.M. at his death in 1938. Another director of both companies, until 1945, was General Sir Francis Reginald Wingate, who had been leader of the British forces in North Africa and the Sudan during the entire period of imperialist conquest until his retirement from the Army in 1922. Lord Stonehaven, on the board of both companies until 1941, has served British imperialist interests since the turn of the century as diplomat, soldier, cabinet member, and Tory leader. In his early years he acted as a political officer with the British armies in the conquest of East Africa, and from 1925 to 1930 as Governor

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* Tanganyika has other important holdings in addition to U.M. shares, and 90 percent interest in Benguela Railway Co. Its subsidiary, Rhodesia-Katanga Co., owns mineral rights and has interests in copper and gold companies. Tanganyika Concessions has the major interest in Kentan Gold Co., which has gold rights in Kenya colony, mining options in the British mandate of Tanganyika (an area taken over from Germany after World War I), and also in Uganda. Kentan owns 97 percent of the capital stock of East Africa Concessions, Ltd., and 90 percent of Geita Gold Co., of Tanganyika Territory. Tanganyika Concessions owns all shares of African Railway Finance Co., Ltd. It also has holdings in Uruwira Minerals, Ltd.

General of Australia. Sir Cecil Lindsay Budd, a Tanganyika director until his death in 1945, was a leading force in the British metal combines, and a member of advisory committees to various British ministries.

The present boards of Tanganyika and its subsidiaries can still boast a galaxy of lords and overlords. Maurice Robert Hely-Hutchinson, chairman of the board, comes from the original South African dynasty that ruled the Cape of Good Hope. His brother, on the board of Westminster Bank, is a director of the British South Africa Co. Among the Tanganyika directors one should mention Sir James Alexander, Keeper of the Privy Purse and Treasurer to the King, whose tours of duty during World War I and following years took him to Palestine, Egypt, and the Union of South Africa. Colonel Harry Greenwood, associated with Williams during the heyday of British expansion in Africa, is still a Tanganyika director. The Earl Grey now on the board is of the same family whose George Grey invaded Katanga and whose Foreign Minister Grey put the heat under Leopold for a share of the Congo wealth. Here one also discovers Earl Grey's brother-in-law, Earl of Selborne, a former High Commissioner of South Africa and during World War II the Minister of Economic Warfare in Churchill's cabinet. Finally, one should not overlook Arthur Owen Crichton, who had fought in the Boer War and became the leading light in a dozen investment trusts with holdings in Africa, Canada and Latin America.*

Besides the division of shares between them, U.M. and Tanganyika are joined by interlocking directors. Maurice Hely-Hutchinson, chairman of Tanganyika, is a vice-president and director of U.M. Godfrey Cresswell Hutchinson, a managing director of Tanganyika, is a member of the three-man Permanent Committee of the board of this Congo mining company. Reciprocally, E. P. van der Straeton represents both U.M. and Société Générale on the board of the British holding company.†

The ancient colonial oligarchy did not withstand for long the concerted drive of the Wall Street bankers for control of world uranium

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* Through common interests in Cuba he is associated with the New York branch of the Schroeder banking syndicate, with which John Foster Dulles and Avery Rockefeller are connected.

† Before the war there were more British directors on U.M. In 1937 four out of the eleven board members of the Congo company were directors of Tanganyika.

Tanganyika Concessions became the vehicle for bringing Morgan, Rockefeller, and other American financial interests into the Congo mining empire. In 1950, as a result of a series of complicated corporate and government maneuvers, the Anglo-Belgian trust was transformed into an Anglo-American-Belgian combine.

The first breach occurred in April 1950, when it was reported that the state-owned Bank of England was negotiating for the transfer of all outstanding shares of Tanganyika to the Anglo-American Corp. of South Africa.[13] In this peak holding company, the Morgan bankers have a substantial minority position alongside the dominant British monopoly group. Six months later, Anglo-American Corp. sold to New York investment bankers 600,000 Tanganyika shares out of the total of 1,667,961 acquired in the earlier deal.[14] These included two financial houses—Lazard Frères and Landenberg, Thalmann & Co.—with whom were associated in the purchase David Rockefeller and International Basic Economy Corp., a high-sounding name for a Rockefeller family investment trust.*

As a result of this deal, two associates of Landenberg, Thalmann (Harry B. Lake and Alexander L. Hood) and George Murnane, a Lazard Frères partner, became directors of Tanganyika Concessions, obviously also representing the Rockefeller interests.†

The final aim of preclusive buying agreements and other government interventions was thus in the process of realization. The absolutist colonial monopoly over Congo uranium had been breached by the two top American financial groups. As yet, they held only minority positions within the consortium, with Morgan participation through Anglo-American Corp. the most important. But this is only the beginning.

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* Nelson Rockefeller, who was Assistant Secretary of State for Latin American Affairs during the war, became president of International Basic Economy Corp. when it was organized in 1946. Until the purchase of Tanganyika shares, the new business enterprises of this family corporation were in Latin America, largely in Venezuela and Brazil. The role played by the Rockefellers in world imperialist expansion was officially acknowledged when President Truman named Nelson Rockefeller in November 1950 chairman of the Public Advisory Board for "Point Four," the so-called technical assistance program for backward areas.

† Murnane serves together with representatives of the Chase National Bank as trustee for the American holdings of the Belgian Solvay group. The share of the Rockefeller and associated interests in Congo minerals is thus fortified by direct connections with Belgian monopoly capital, and by other interests in the Congo, as will be shown.

In addition to the strategic value of this conquest, the American bankers have gained a share in a very profitable business. In 1949 U.M. reported a net profit of 874,997,354 francs (about $18 million) after taxes and deductions for depreciation and other charges, an increase almost threefold since 1944. These profits are squeezed out of African labor through as "calculated and calculating" a system of exploitation as can be found anywhere in the colonial world.

Forced Labor in Katanga

Congo uranium and other minerals are produced under a regime of strictly regimented labor. The wild terrorism of the Congo Free State and the earlier years of Belgian colonial rule, with reckless destruction of life and native institutions, has been tempered by a sickening paternalism reminiscent of the old American slave system. Government and company policies are calculated to assure a colonial labor supply which can be permanently and systematically exploited under the system of industrial peonage which prevails at the plantations, mines, and other enterprises of the great trusts.

The forcer labor system operates within the framework of a colonial policy unhampered by pretenses to political advancement such as have become quite fashionable in other empires. The Belgian government promises the Congo people neither eventual independence nor immdiate steps toward self-rule. In the official view, the more than ten million Negroes of the Congo are "children with inferior souls" to be molded by the 35,000 European "supermen" who rule the colony and its economic establishments at various levels of authority. Here and there the colonial rulers have had to give way somewhat in face of mounting pressure from the Congolese and the global effects of the liberation movements which are shaking the colonial world. But the Belgian despots show not the slightest intention at the moment of relaxing their "lily-white" tyranny. In January 1950, despite serious internal upheavals, the Governor let it be known that:

"With regard to the exercise of legislative power in the colony, the Minister of Colonies did not deem it opportune for the time being to bring structural modifications to the means of exercising power and to the representation of colonial people in the Councils. The Minister expressed the same opinion on the exercise of political rights and the reform of the Colonial Council."[15]

While barring the political structure to the native people, the prime function of the colonial regime, to which all else is subordinated, is to assure recruiting for the contract labor system and its continuity. Disruption of native life, with the consequent spread of an enervating and persistent poverty, proceeds perhaps less ruthlessly but more systematically than under the rule of Leopold, the robber king. Constant encroachment upon native arable land; the recruiting of the peasants at a wage of one dollar or less a month on the huge plantations of Lever Bros., the mammoth Anglo-Dutch food trust, or of Société Générale's agricultural subsidiaries; and the draft of young men from the villages for labor in the mines, have impaired the native economy and transformed it into a vast reservoir of forced labor.

It would be difficult to find a more illuminating exposure of the system of industrial peonage than is provided by U.M.'s official formulation of native labor policy and directives for the guidance of its agents and managers. This U.M. handbook,[16] which we are assured is the indispensable guide for all company agents concerned with native labor, was published in the journal of the Royal Colonial Institute of Belgium in 1946 to illustrate the paternal concern of the mining monopoly for the welfare of its "wards." As an indication of its general approach, it is sufficient to cite the introductory exhortation to U.M. officials "never to forget that the Negroes have souls of children, souls which shape themselves to the methods of the educator; they watch, listen, feel and give forth." For his part, the European is instructed under all circumstances to remember his role as a white superman and is told "to deport himself as a calm and wise chief, good without weakness, benevolent without familiarity, acting methodically and above all justly in punishment for faults as in awards for good deeds."

This document is accompanied by a commentary demonstrating the "success" of the labor policy by Dr. L. Mottoule, Adviser on Medical and Labor Affairs to U.M. and Forminière, the Congo diamond trust. In the course of his apologetics, the author cites with indignation the comments of an English visitor to the Congo during the war who compared the Belgians to "the proprietor of a stud-breeding farm who looks after his horses at much expense to obtain greater profits." To which the faithful doctor retorts: It is more than just good business, it is also "charity and even love for the inferior brother."

The mining monopoly's version of charity and love has been systematized into a policy of "stabilization of native labor," in effect since

1935. Until then, U.M. had depended primarily upon the recruiting of labor under contract from distant regions, since the bleak uplands of Katanga, where its enterprises are located, were sparsely populated. Between 1921 and 1929, to retain an average annual force of 12,700 native workers U.M. drafted almost 100,000 Negroes from the more densely populated areas of the Congo, including the Belgian mandate of Ruana-Urundi, also from Rhodesia and central Africa, from places as far away as Mozambique and Nyasaland. Torn away from their native villages, in most cases transported by train or plane from torrid regions to the cold uplands, and subjected to the prison-like labor camps and the high intensity of work in the mines and mills, the natives easily succumbed to disease. Even according to official company statistics, for the period between 1925 to 1929 the annual mortality in the company towns per thousand was 39.1 for men, 25.9 for women, and 161 for children. This does not include innumerable workers no longer able to labor who were turned out with their families to die elsewhere. During the great crisis of the early thirties, two thirds of the labor force was fired.

The new policy of "stabilization" was intended to save the expenses of recruiting and transport, placed at 1,000 francs a worker, while creating a resident labor force in the strictly supervised company compounds. Migratory contract labor is still used, but the new regime has reduced dependence upon recruiting outside Katanga. Instead, the main emphasis is upon retaining by compulsory contract the laborers already on hand and binding their offspring for work in the U.M. enterprises. Education, health services, family life, feeding, "spiritual guidance, even amusement, are strictly co-ordinated by the trust.

Contracts are for three years, according to the company handbook, the minimum time to assure "disciplined" and "reasonable" workers, sufficiently weaned away from their home villages. While the pretense is maintained that contracts are freely assumed by the workers on the employers' terms, of course—the penal code of the colony leaves no doubt that they are compulsory and inviolate. In fact, contracts are the most sacred institution of the colony, unless it be the institution of white supremacy. On complaint of an employer, a contract laborer may be fined and imprisoned for violations of the contract or of discipline in the place of employment. The penal code also provides punishment for a worker defacing his work book or refusing to present it to the proper authorities; and if a contract laborer is found more than 25 kilometers away from his assigned residence area, he may be seized and returned or punished, depending upon the will of the employer. The contract always remains inviolate, its term extended for the length of imprisonment.[17] The system of contract labor is thus backed by the entire force of the colonial regime, itself a major stockholder in the Congo trusts.*

The penal sanctions are imposed only when the recalcitrant worker can no longer be handled by the trusts, which constitute the first line of authority over every phase of native labor. For the worker must live within the labor camp attached to the enterprise and ruled by an agent of U.M. who acts as camp chief. He enforces discipline by penalties graded in accordance with the seriousness of the violation and including, as listed in the company directives, reprimand, withdrawal of privileges (such as leave, better housing accommodations, or permission to marry), fines, reduction or even withholding of wages, degrading, dismissal, or refusal to repatriate. These penalties together with all other pertinent facts about the worker are entered in a dossier which is kept by the camp chief, to be consulted before any move affecting the worker is made.

Not only is the worker registered, docketed, and finger-printed, but he is issued various forms to be produced on request, in which are recorded his work permit, assigned residence, equipment allowance, or, if applicable, fines and prison record. He must also have on hand proof of having paid his head tax and other special levies, the company agent being instructed to see to it that the worker pays these directly to government collectors, "as an indispensable act of respect and submission."

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* Punishment for violation of contract is very common in the colony. A Visiting Mission of the United Nations to Ruanda-Urundi, a trust territory administered by the Congo colonial government, found that 758 workers were punished in 1947 for this reason, apart from optional fines which may have been paid. The Mission also reported that whipping remained a widespread form of punishment, the colonial regime considering its abolition to be "premature." Whipping is used not only in connection with prison labor on the roads but also against agricultural laborers employed by Europeans. A daily wage of one or two francs (two to four cents) is still very common. Since the Belgians have ruled Ruanda-Urundi for the past 25 years as a province of the Congo, the report also indicates the conditions prevailing throughout the colony. (United Nations, *Document T/217*, Nov. 8, 1948.) In 1950, the Belgian government refused to support a resolution in the Trusteeship Council of the U.N. for the abolition of whipping.

The camp chiefs are told to give due consideration to the complaints of a worker, with the obvious intention of forestalling independent labor organization. The chief has the power to dispose of these complaints as he sees fit, and enters a complete record in the dossier. However, complaints against Europeans are placed in a very special category:

"When a worker makes a complaint against a European it is necessary to give him the opportunity to explain his grievance completely; if this is not permitted the Negro feels there is partiality and injustice on this score, thus losing his confidence. It is hardly necessary to listen to him too willingly, since in this way he may be led to exaggerate his complaints and thus commit an indiscipline.

"After having made a complaint of this kind to his camp chief the Negro should leave with the conviction that he will be defended by the camp chief. Obviously a Negro should not know the disposal of his complaints against Europeans.

"The complaints of natives against Europeans are entered in a special register. This register is sent to the director of the work establishment, who notes therein the steps taken and eventually whatever sanctions are applied."

Within the completely segregated camp under the absolute authority of the company agent, the worker is provided with a quota of housing, food, and other necessities, sufficient to keep him able to perform heavy labor according to standards determined by the trust. Either at his place of work or at the camp the laborer is fed the calculated calories and food rations are also given his family. On occasion, as the handbook says, the camp chief "may withhold the ration of the worker's wife who does not submit to the discipline of the camp and especially to useful work and duties, whether for the family or the community." U.M. calculates that the worker's rations, including food allotted his family, amounts to 35 percent of the cost of native labor.[18] The food item, however, should also be charged up to the costs of procreating future contract laborers for the trust, one of the principal aims of the policy of "stabilization."

Encouragement of marriage and child-bearing is a cardinal tenet of U.M.'s native labor policy, with the objective of creating a labor force native to the company towns and reared from an early age by company agents. To this end, family accommodations rather than barracks are provided within the compound, and such special mea-

sures are taken as aid in the payment of dowries, the training of women for family life as pictured by the mining trust, and elementary prenatal and child-care. The latter services together with such medical care as is provided for the workers amount to no more than 10 percent of the cost of labor, a very profitable investment considering the fact that the number of children per 1,000 workmen rose from 32 in 1926 to 112 in 1942.[19] Although infant mortality has been reduced by half since the policy of recklessly squandering migratory labor was abandoned, the high rate still prevailing indicates the bare minimum at which medical services are maintained. In 1944, the last year for which company statistics are available, there were 40 still-births per 1,000 births, and 111 babies under one year old died for every thousand born.[20]

Those managing to stay alive until they are five years old are taken in hand by the company for training as loyal servitors. U.M. boasts that a system of compulsory primary education prevails in its labor camps. It is certainly compulsory, but for what? The handbook of company policy defines the aim of primary education for native children as follows: "to inculcate the children of the workers with elementary notions which will permit them to become good workers later," while avoiding the kind of instruction that would result in "declassed children," dissatisfied with their present lot and their destiny as industrial peons of the trust. To make doubly sure of the future contract labor supply, the African teachers are under the supervision of white priests, and must be approved by U.M.'s Department of Native Labor. The teachers are paid by the company and are subject to camp discipline.

Not that the Congolese youth are exposed outside U.M. camps to a radically different educational environment. The educational system as a whole is attuned to the labor requirements of the colonial trusts and to submission before the foreign ruling power. Writing from Elizabethville, the headquarters city of the Katanga mining empire, the American correspondent A. T. Steele declared that the Belgians "do not want at this stage [this was written in 1948—J.S.A.] the creation of a highly educated, politically conscious minority that might agitate for self-rule. The educational emphasis at the moment is on the primary grades, and even there it is handicapped by an over-concentration on religious training and a deficiency of able teaching personnel. Only 8,200 Africans are enrolled in secondary schools, and only a fraction of these will ever finish a full high school course.

College education is something many Congolese dream about but few attain, unless they are devout Catholics. Virtually all of the 140 natives who have this university education are Catholic priests."[21]

The Negro workers' children in the U.M. camps are hardly given time to dream of higher education. From the age of ten, the boys are put to labor around the camp for at least three hours a day. By the time they are 12 years old they have "graduated" from school and are employed all day in the compound or on the camp farm. Let it not be said that U.M. fails to pay its child laborers. Once they work full time they get 20 francs per month, the "wage" being increased by five francs in succeeding years to the maximum of 35 francs. By then, they have reached 16 years, and they are apprenticed to the mines and mills, eventually becoming full-fledged contract laborers. The girls are prepared to become the wives of U.M. workers. They are taught to sew at workshops turning out clothes and other equipment for the hospitals and plants. For this work, the handbook states cryptically, they receive a wage.

Personal life, culture, and entertainment are under strict surveillance by the company, which also maintains canteens within the compound to hold contact with the outside to a minimum. Camp chiefs are instructed to keep the workers out of nearby communities, where they may be exposed to "immoral" influences. Occasionally, if he is considered a "loyal" servitor, a worker may be given leave to visit his native village. The handbook counsels company agents against forcing Catholicism upon the Negro, but the schools are in the hands of the church, and the "social bureau" maintained within the camp to give "moral guidance" and provide some local entertainment is headed by a priest. A native may be appointed to take charge of the "social hall," where he also acts as public letter writer or, to phrase it appropriately, as a company stool-pigeon. For the camp chief is told to choose him carefully, since "he ought to be a native of solid moral foundation but [*sic*] also a devoted servitor of U.M."

Pensions are also provided, since older workers may still be of value to U.M. The maximum of 50 francs a month may be paid as a pension to those workers who during the long years of toil "have given proof of devotion and attachment to the company." A pensioner must remain in the Congo, where he can serve the interests of the company in connection with labor recruiting in the native villages, and if he has children employed by U.M., these must remain at work.

Grading of jobs and the scale of wages are carefully worked out, but the company directives give no detailed information on this score. However, the general wage level may be gauged from a minimum standard of Congo living fixed by the Council of Government in 1949 in terms of the possessions an African bachelor should be able to acquire. "He should be able," said the Council, "to get a cake of soap a week, six packages of matches, twelve liters of gasoline and as a 'luxury item' one pack of cigarettes. Within a year he should have acquired a plate, a knife, a glass, a bowl, two shirts, a jacket, a pair of shoes and a raincoat. At the end of two years he should have two pans, two basins, and a pail."[22]

Such is the system of forced labor and rationed living from the cradle to the grave which prevails in the enterprises of U.M.

The same system of industrial peonage is to be found at Shinkolobwe mine. Since uranium production has been greatly expanded in recent years, several thousand African workers have been brought in from distant regions. They are bound by a seven-year contract, rather than the three-year term that is the rule in other U.M. enterprises, and are said to reecive a higher wage, equivalent to $25 a month. They are not allowed to leave the restricted area until their contract expires.[23]

This system, of course, has its own peculiar weaknesses. The most dangerous aspect, from the viewpoint of the interests of the trusts and colonial rule, is the emergence of a stable native working class, which cannot be kept for long within the safe bounds so meticulously laid out by the monopolies. Moreover, under the conditions prevailing in the Congo it proved impossible to prevent the rise of skilled and professional workers. The difficulty of recruiting labor from Europe forced the colonial trusts to train a quota of Negro workers as skilled mechanics, railroad engineers, office workers, teachers, medical assistants, and other specialists required by the companies, but always employed at lower wages and under worse conditions than Europeans at the same tasks. Recent visitors to the Congo report that more Negroes are to be found in these occupations than in other regions of Central and South Africa. Thus the exclusive Belgian aristocracy of the Congo, inadvertently and of necessity, could not avoid creating a numerous class of Negro workers and also professionals employed in government and private enterprise, who are already beginning to challenge the colonial rulers.

There is not a single independently-owned African newspaper in the

Congo to inform the people of the great freedom movement sweeping the colonial world. But this heavy censorship apparently did not deter the Congolese people. Efforts by the authorities to head off a ground swell for liberation are indicated by some recent faint reforms in the regime of colonial absolutism. During the war a Permanent Commission for the Protection of Natives was appointed by the colonial government. Despite repeated requests for representation, not a single workers' representative was included on the Commission, which consists of eight Catholic dignitaries, three Protestant missionaries, two representatives of the employers, and other members of the colonial elite.[24]

As the result of a powerful strike movement of transport and other workers, in which thousands were wounded by troops, the Colonial Council passed an ordinance, in 1946, for the first time allowing Africans to form trade unions, and providing for the negotiation of agreements in certain trades.[25] In 1949 and 1950 symptoms appeared, through the thick wall of colonial censorship and distortion, of labor organization even within the holy precincts of U.M. The press carried garbled accounts of a "subversive" movement among the African workers, with all seriousness traced to the Soviet Legation in far-away Addis Ababa, capital of Ethiopia. The movement seemed to have greatest strength in two areas: Leopoldville, the chief transport center, and the mines of Katanga. The entire police organization, especially in the Katanga region, was reported alerted, and there was talk of military action against the workers.

The extreme nervousness of the colonial rulers in the face of the upsurge of Congolese labor is reflected in the outlawing of various native organizations, such as Kibangisme in Kasai province and Ntumu in Kivu, as "menacing peace and public order." Even the Watchtower Bible and Tract Society was banned from the colony in 1950, and its leader deported. The importation of several listed books, periodicals and newspapers published in Europe and the United States is prohibited.[26]

The Belgian Congo cannot remain padlocked for long against the colonial liberation movement of the African peoples. Even this fortress of ancient colonial looters, now joined by the overbearing barons of Wall Street, is challenged from within by the Negro working class, those "children with inferior souls" with their dream of a free Congo which the enslaving "supermen" are utterly incapable of understanding.

16. The African Mining Empire

THE STRUGGLE FOR Congo uranium is part of the expansion of American imperialism into Africa, which attained new momentum during World War II and developed on a wide front in the postwar years.

As in Canada, the principal imperialist rival is Britain. But in seeking to penetrate the regions of Africa richest in raw materials the United States expansionists confront a task of a different order than in Canada. The latter has been brought well within the American corporate and strategic orbit. Control of its uranium and other resources may be managed as part of the consolidation of United States finance capital in general within the highly industrialized and monopolized economy of the Dominion. In Africa, on the other hand, American imperialism must contend with long established colonial oligarchies, in an area where the United States has until very recently held only a relatively minor position, and where the native peoples are resisting imperialist domination in general.

United States in Africa

As a rich source of raw material and cheap colonial labor Africa figures prominently in the expansionist scheme of American monopoly. The continent is also seen as a central marshaling ground for the contemplated war against the Soviet Union, and as the pivot for military domination of the Middle East.

World War II broke new ground for the erection of American military outposts, especially in northwest Africa where the United States has an older foothold in the semi-colony of Liberia. This general area became a special strategic sphere of the United States after the war, when bases and advantages gained during the conflict were retained. This position was bolstered by the acquisition of permanent bases in the Azores, by economic expansion in Spain accompanied, it is believed, by military concessions, and by command of the shortest line of communication across the South Atlantic from the Brazilian "bulge," where United States military forces are entrenched.

Along with the growing influence of the United States *vis à vis* other imperialist powers in the Mediterranean region and in the Middle East, the American expansionists also sought to establish a strategic position in East and Northeast Africa. Significant gains were made in the economic penetration of Egypt and Ethiopia, but the principal strategic interest is in East Africa which the British are transforming into a huge military base, with the aid of the United States. The main military concentration is now in Kenya, where the British Middle East Command has been transferred. With a view to bolstering the ancient colonial sphere in this area and backing possible military action against the Soviet Union and the socialist nations of eastern Europe, the United States was invited by the British Labor Government to support various "development" schemes, which are poorly disguised military projects. Such, for example, is the projected railway link between Central and East Africa, and the related plan for extending the railroad network along the length of the African east coast.

These military undertakings cannot be separated from the Wall Street crusade to control strategic raw materials in preserves long dominated by the British and secondary colonial powers. Under the scarce materials provision of the Marshall Plan and in the bilateral agreements of the North Atlantic Pact, each country receiving United States grants, loans, and arms was pledged to supply strategic materials to the United States from dependencies as well as the homeland, often at the price of starving its own industries. The recipient countries were bound to repay five percent of the total aid given under the Marshall Plan with strategic materials or by capital investment in the development of resources. As United States aid mounted, and additional commitments were extracted through the Atlantic Pact agreements, the United States government increased pressure for the delivery of strategic materials and for the further expansion of the mining industry in colonial areas with the participation of American capital, both governmental and private.*

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* The Economic Cooperation Administration (the Marshall Plan Agency) operated in multiple ways to further the penetration of African mining by American monopoly. A few examples will suffice. At the end of 1948, E.C.A. offered to purchase in the United States for the account of British and other companies engaged in African mining enterprises the equipment needed to modernize and expand production. The supply of equipment, of course, cannot be separated from monopoly control of the new processes and the engineering "know-how" which would be supplied by the American trusts only at the price of participation in the enterprise.

A more direct means of increasing the stake of American bankers in African companies was the allotment of E.C.A. funds directly to American mining combines, which these companies used to break into established monopolies. Thus, E.C.A. granted $3.6 million to Newmont Mining Corp. for development of lead and zinc mines in French Morocco, to be repaid in ores over a period of seven years. This grant aided the Morgan-controlled company to increase its share in the Zellidja mines, until now dominated by French capital.

The Marshall Plan countries were also forced to deliver raw materials from Africa. Thus, in January 1949, in fulfillment of the E.C.A agreement, France delivered 20,000 tons of graphite to the United States. The British Colonial Office negotiated with E.C.A. for American technicians to explore and develop mineral resources and to engineer new transportation for the movement of raw materials, especially in Nigeria and the Gold Coast, but also in Northern Rhodesia, Tanganyika, and Kenya.

American monopoly is most active in Central and South Africa, the regions richest in raw materials. Traditionally, the bulk of American capital investment in Africa was concentrated in these regions, although on a relatively small scale when compared with the massive British investments. By 1935, American capital in Africa amounted to $123.6 million, mostly in oil distribution, rubber, and mining. On the other hand, the older colonial powers had invested over $6 billion (including loans and grants to governments), the British regions alone accounting for 77 percent of the total, mostly in the Union of South Africa, the Rhodesias, Nigeria, and Tanganyika. The Belgian Congo was next in importance with 11.7 percent of the total, while the French colonies accounted for only 5.7 percent and the Portuguese territories for 5.5 percent.[1]

In the new expansionist wave inaugurated by World War II, the American monopoly groups rapidly extended their interests in Africa. By 1943, in the midst of war, the American investment rose to $200 million, not counting big amounts of American capital channeled into African enterprises through corporations in Britain and Canada,* nor those companies in which American nationals own less than 25 percent of voting rights.

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* Anglo-American companies in Britain and Canada make direct investments in other countries which do not appear in the statistics of American investment abroad. At the end of World War II the American investment in Britain amounted to about $1 billion, almost equally divided between U.S.-controlled companies incorporated in Britain and companies controlled by British capital. Companies in Britain controlled by American capital had interests extending into some 40 countries. Thus, a considerable part of the American investments in Rhodesia and Argentina were held through companies in England, even before American capitalists bought control of some exterprises from the British dur-

About 70 percent of American investment in Africa was in those regions well within the British sphere. Of these, the Union of South Africa is most important, representing almost half of all African investments by American companies, followed by Egypt and Northern Rhodesia. After these areas came the semi-colony of Liberia, and then the Belgian Congo.[2]

By the war's end, with the help of more direct investment and the purchase of British-held shares wherever possible, American monopoly had obtained a substantial start toward becoming a leading exploiter of Africa. In contrast to the situation prevailing before the war, the American corporations reached out into practically every part of Africa,* although South Africa still remained most important.

In their feverish efforts to seize the mineral resources of Africa and extend their sway over that continent, the American expansionists

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ing the war. (*Census of American-Owned Assets in Foreign Countries*, p. 32.) The same holds true for Canada, where American investment is even larger. Accordingly, capital entering African enterprises from Britain or even Canada may already be Anglo-American capital to a substantial extent, before its further merger in Africa with direct capital investment from the United States.

* The oil companies turned to primary exploitation from their traditional role in Africa mainly as distributors of products: Sinclair Oil grabbed a huge concession in Ethiopia; the Standard companies extended operations in Egypt and Gulf Oil obtained concessions in the Portuguese East African colony of Mozambique and from the French in Tunisia. Stettinius Associates took over the monopoly of Liberian resources (outside of iron ore now controlled by Republic Steel, and Firestone's rubber plantations), and extended their operations into the French Congo and Sierra Leone. The American mining combines were especially active. Bethlehem Steel began exploration for iron ore in Nigeria while the Canadian affiliate of Aluminum Co. of America got a monopoly of Gold Coast bauxite. Newmont gained control of two important copper companies in South Africa (Tsumeb and O'okiep), in which American Metals has minority interests. Newmont also obtained an important interest in the French lead-mining trusts of North Africa, which are dominated by the peak French colonial oligarchy centered in La Banque de Paris et des Pays-Bas. St. Joseph Lead, partly owned by Newmont, also participated. Ventures, Inc., which we met in Canada where it operates within the general sphere of the Morgan monopoly group, set up Mines, Inc., to join in the exploitation of the lead and other mineral resources of French North Africa. It also established African Exploration, Ltd., as the holding company for its growing African interests which now include the Connemara-Zabonkwe gold mines in Southern Rhodesia and the Kilembe copper-cobalt mine in western Uganda. The most important expansions—within the principal monopoly complex which controls South African minerals—is described later in this chapter.

stopped at nothing. In the style which had become familiar in the extension of empire in the past, foraging parties were disguised as scientific and philanthropic expeditions. Such a case was the "scientific" expedition of the University of California in 1948 to various regions of Africa. Most of the $500,000 was contributed by leading American corporations; the U.S. Navy arranged transport; the Air Force supplied equipment; and representatives of the armed forces accompanied the party. It was only natural that the venture was characterized abroad as a "front" for a grand-scale military and economic espionage operation. The farce was carried further at the end of 1949 when W. Phillips, the leader of this expedition, became president of a new "scientific" center, with the high-sounding title of the American Foundation for the Study of Man. Its announced purpose was to conduct research into the evolution, development, and history of man, it may be presumed in far-off places where minerals are more important than anthropology and military strategy outshines evolution. Among the directors of this "institute" are Fleet Admiral Chester W. Nimitz; Lowell Thomas, the radio commentator with a hankering for remote spots such as Tibet; and Samuel F. Pryor, vice-president of Pan American World Airways.[3]

As a result of the growing American corporate and strategic expansion into Africa, the United States monopolists and the Washington government partake on an increasing scale in the extreme exploitation of African labor, and in the maintenance of oppressive, super-white regimes. We now find the American government currying favor with the aggressive white-supremacist Malan regime of the Union of South Africa, and seeking alliances with the local fuehrers of the Rhodesias and other colonies. To help break into the resources of Mozambique and Angola and control these important outlets for the interior mineral regions, the decrepit Salazar regime of Portugal is aided and abetted. Franco of Spain becomes a favorite son of American diplomacy for his aid in establishing United States positions in the Mediterranean and Northwest Africa. The Wall Street bankers now have a powerful vested interest in preserving the entire colonial structure of Africa, favoring only those changes which will increase their share of the spoils.

On their side, the British would like to hold onto their last great colonial preserve. Within the Anglo-American alliance that has dominated the postwar capitalist world the rivalry between the two powers is sharp, although within a new global relationship in which the United

States is dominant by far. Africa is one of the central spheres in which this inner antagonism is being played out. In seeking to restrain American monopoly and strategic penetration, British imperialism relies upon its domination of the African possessions, extended during the war by new positions gained in the former Italian colonies. It also seeks to utilize its old alliances with the lesser colonial powers—Belgium, France, Portugal, and Spain. But these restraints upon American expansion are conditioned by the growing dependence of Britain upon economic and military support from the United States. Thus, Britain must invite its chief rival behind the colonial barriers to participate in the looting and control of Africa if she is to retain a favored position there, and thus also hope to prolong the colonial system.

Joint Anglo-American enterprises are therefore a main channel for the flow of American capital into Africa, although the financial magnates of the United States are also increasing investments in enterprises entirely controlled by themselves. Just as Britain used participation in joint undertakings with the other colonial powers in Africa to extend its hold over the continent, American monopoly is now using its joint ventures with the British—and also with other powers—to extend its position in Africa and undermine the older oligarchies.

As indicated in the previous chapter, a complex of joint undertakings provided the American trusts with the approach to control of Congo uranium resources. In seeking to widen the breach forced in 1950 in the Anglo-Belgian monopoly of Congo minerals, the American monopolists operate principally through the intricate corporate structure controlling world metals, in which the chief monopoly groups dominating Africa are also involved. The American bankers have a long background of participation in the cartels which have exploited Africa since the turn of the century, and within which they are expanding at the expense of British and other monopoly groupings.

Rhodes to Morgan

We have seen how Tanganyika Concessions stems from the original coterie of British empire-builders led by Rhodes. The three parent trusts established by the freebooters in the conquest of South Africa are today the pillars of the most powerful monopoly group dominating the mineral resources of the continent.

Through early control of the Kimberley fields and the absorption of

competitors, the Rhodes group established the South African diamond monopoly, now carried forward by De Beers Consolidated Mines. Similarly, control of the Transvaal gold mines seized by Rhodes is now maintained by Consolidated Gold Fields of South Africa and numerous affiliated firms. The old chartered company which Rhodes used to conquer Rhodesia continues as the British South Africa Co., and its influence ramifies throughout the mining industry as a result of its control of mineral rights.[*] These trusts, each dominating vast domains, are closely integrated into a single monopoly complex.

The original loot, obtained by conquest and swollen by ruthless oppression of the African peoples, is the base of the peak monopoly group of South Africa, headed today by Sir Ernest Oppenheimer. Besides controlling the world diamond cartel, the De Beers-Oppenheimer group is the largest of the six financial houses dominating the gold-mining industry of South Africa. It controls a portion of the Rhodesian copper fields, and is part owner of the Katanga mining trust. Its influence reaches out into many other branches of the economy, including plantations, railroads, utilities, communications, banking, and industry. Among the important industrial holdings of the De Beers oligarchy is African Explosives & Chemical Industries, Ltd., control of which is shared with Imperial Chemicals of Britain.

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[*] British South Africa Co. was chartered by the Crown in 1889 and granted by treaty the right to govern for 25 years the territory of 440,000 square miles now known as the Rhodesias. King Lo Bengula, the paramount ruler of the native peoples in this area, was tricked into assigning all mineral rights to the new company, and then Rhodes sent in his private army to subdue the people. Firmly controlled by the De Beers monopoly, the chartered company reigned supreme until 1924, when Rhodesia was placed as a "self-governing" colony under the authority of the Colonial Office in London. But the company remained the real ruler. Its mineral rights in Southern Rhodesia and its administrative assets were sold to the government for £5.75 million. On top of this deal, the company retained all mineral rights in Northern Rhodesia, the principal mining area, and also in Nyasaland and Bechuanaland. It also kept the Rhodesian railway system (which controls the movement of minerals out of the colony) and citrus and other estates totaling more than 100,000 acres. To this day, British South Africa Co. receives half the proceeds from the disposal of land in northwest Rhodesia, and according to the agreement will continue until 1964 to collect its share.

This ancient monopoly reaches into every major mining enterprise of the Rhodesias, and dominates the economy as a whole. Sir Douglas Malcolm, its president, is a director of both central holding companies in control of Rhodesian copper. Through possession of the Rhodesian railways and of Beira Railway Co., which commands the outlet to the sea through Portuguese Mozambique, the company sits astride one route over which Congo uranium can be exported, while its sister company, Tanganyika Concessions, dominates the outlet to the South Atlantic.

Morgan came into this peak monopoly group in the wave of American foreign expansion stimulated by World War I. After lengthy negotiations in the United States between Oppenheimer and the Morgan bankers, the Anglo-American Corp. of South Africa was organized in 1917, as the holding company for a portion of the massive mining and industrial interests of the Oppenheimer group. Morgan obtained a minority but substantial interest in the new company.* As this monopoly extended its power, Morgan's stake in Africa grew with it, although in a continuing minority position. In 1949, Anglo-American Corp. listed 47 mining companies (not counting scores of subsidiaries) for which it acts as manager, secretary or consulting engineer.[4]

Through this top holding company, the Morgan bankers obtained a share in control of Congo minerals, including uranium, when all stocks of Tanganyika Concessions were transferred to Anglo-American Corp. in 1950. The Morgan group also may have substantially increased its holdings in Anglo-American during World War II, when the British were hard pressed.

Association with the De Beers monopoly group also gives the Morgan bankers a significant share of control over another important source of uranium only recently developed. It has been known for some time that the gold formations in the Rand fields of the Union of South Africa contain uranium. Under the guidance of the Raw Materials Division of the A.E.C., where the Morgan trusts are supreme, work was started to perfect processes for the extraction of the atomic raw material as a by-product of the gold ores. By June 1950, a pilot plant was in operation and by the end of that year an agreement had been reached with the racist Malan government for the supply of uranium to the United States and Britain. Uranium processing plants were to be constructed "on an urgent basis" initially at four gold mines, three of which are controlled by Anglo-American Corp.† These companies

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* E. R. Stettinius, Sr., a close Morgan associate, and directors of the Morgan-controlled Newmont Mining Corp. and Guaranty Trust Co. of New York were on the original board of the new company or on its New York Committee.

† These are: West Rand Consolidated Mines, Daggafontein Mines, and Blyvooruitzicht Gold Mining. The fourth company is Western Reefs Exploration & Development. Following the announcement of the agreement, prices for the shares of these companies skyrocketed: West Rand from 4s.4½d. to 43s.1½d.; Daggafontein, from 3s.1½d. to 71s.3d.; Blyvooruitzicht, from 2s.6d. to 49s.4½d.; and Western Reefs, from 3s.1½d. to 38s.9d. (E. H. Burhop, *The Challenge of Atomic Energy,* London, 1951, p. 90.)

were to be supplied with new capital by private bankers in the United States and Britain.[5] At the same time, Morgan companies were investing in the new gold fields of the Orange Free State, where similar possibilities may exist.*

The Morgan group thus obtained a strategic position in the control of the two principal sources of uranium in Africa. Efforts to expand this foothold are favored by the American imperialist drive for control of Africa in general, and by the growing participation of Wall Street bankers in the complex cartel network dominating strategic materials.

Diamonds and Guggenheim

American capital entered at an early date into the scramble for African resources. The diamond fields were especially tempting. Even before World War I, when the Morgan bankers obtained a slice of the diamond monopoly by participation in the joint company with the British, other American promoters made forays into the South African preserves. John Hays Hammond, the American mining engineer who was later associated with the big trusts, joined Rhodes very early in his piratical ventures. He participated in the first abortive raid against the Boers, the precursor of the Boer War by which the British mining interests seized control of the Transvaal from the Dutch settlers. Then, in 1907, Daniel Guggenheim, the copper and non-ferrous minerals king, together with Thomas Fortune Ryan, the New York real estate and utility millionaire, became partners with King Leopold in the looting of the Congo. They obtained a large bloc of shares in the concessionaire company set up in 1906 by the Belgian robber king to control the minerals of the Kasai region. By 1913 this company, Société Internationale Forestière et Minière du Congo (Forminière), became an important diamond producer.

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* For this purpose a new Anglo-American trust was organized, the American Anglo-Transvaal Consolidated Investment Co. Kennecott took a half-interest in the new combine, and was joined by Phelps Dodge, whose board chairman became a director of the investment trust. The other half-interest is held by Anglo-Transvaal Consolidated Investment Co,. one of the leading financial houses of South Africa, listing in 1949 some 30 mining and industrial companies (not including numerous affiliates) in which it has interests. The deal was concluded through the banking houses of Lazard Frères of New York, Lazard's of London, and the Schroeder Bank of London, and looks forward to "active co-operation in the further development of mining and industrial activities in South Africa." (*The Economist,* London, Aug. 17, 1949.) The role of the Schroeder bank in the German cartel network has already been indicated. An interesting comment on Lazard's is found in Robert E. Sherwood's book, *Roosevelt and Hopkins* (p. 679). According to Secretary of State Hull, Lazard's was closely associated with the de Gaulle organization in London during the war.

From here, the American capitalists branched out. In 1917, the same year in which Morgan stepped heavily into the South African monopoly group, Guggenheim and Ryan joined Forminière and U.M. in financing a new company organized to exploit the diamond fields in the adjoining Portuguese colony of Angola. The American financiers obtained 24 percent interest, later reduced to 19 percent, in Compagnie de Diamants de L'Angola.* Since 1929, Forminière, Angola, and Société Minière de Beceka—which was organized in 1921 as an affiliate of Société Générale—have supplanted the Union of South Africa in the output of industrial diamonds. Forminière, affiliated with Société Générale and owned 56 percent by the Congo colonial government, alone supplies two-thirds of the world output of industrial diamonds.

Thus, from two sides, the Morgan-Guggenheim group came full force into the world diamond cartel, along with the Congo companies and the De Beers monopoly.

Since 1887, when Rhodes got control, De Beers has continuously dominated the cartel.[6] An indication of the high place held by De Beers in the British financial and ruling oligarchy is the presence of Oppenheimer on the board of Barclay's Bank, and the appearance of Field Marshal Viscount Wavell on De Beers' board of directors in 1949.

In the intermittent outcry against this cartel by the users of industrial diamonds in the United States, it is seldom mentioned that American finance capital is deeply involved. During World War II, when serious shortages of industrial diamonds developed in the United States, the cartel would not relax its strict allocations, and despite considerable pressure could not be broken down.

The big four of the cartel are British De Beers, Belgian Forminière, Portuguese Diamang, and French CAST. The latter company is controlled by De Beers. Accordingly, American monopoly capital has a minority interest in two of the big four (through its participation with the Oppenheimer interests in Anglo-American Corp. of South Africa) and a direct and substantial interest in the other two.

* In 1923, Anglo-American Corp., with which the Morgan group is associated, also obtained a 19 percent interest in Angola.

After the war, certain efforts were made in the United States to wrest control of the cartel from the Oppenheimer group, through the device of building up strategic stockpiles of industrial diamonds, and thus creating a certain degree of independence from the cartel. But Oppenheimer, with the co-operation of the governments of Britain, Belgium, and the Union of South Africa, and perhaps also of France and Portugal, prevented the accumulation of a stockpile in the United States by controlling diamond exports.

Efforts continued on the American side by bringing pressure to bear upon these governments, through loans, the Marshall Plan, and other means. The main strategy seemed to be to pry the major industrial diamond producers of the Congo and West Africa loose from the Oppenheimer cartel. But these efforts were of no avail. Through its South African monopoly, control of the new fields of Southwest Africa, and domination of the entire distribution apparatus to selected brokers and cutters, the De Beers' combine was able to control the cartel.

De Beers remains the controlling shareholder of Diamond Corp., Ltd., the world distributor of gems, but apparently it had to give way somewhat when the distribution of industrial diamonds was allocated in 1946 to a separate branch of the cartel, Industrial Distributors, Ltd. It is doubtful, however, whether this represents a significant change in the old monopoly, although it may indicate a slight shift within the cartel to the companies in which American capital is most directly involved. In May 1950, a new six-year agreement for the "orderly marketing" of diamonds was announced by the cartel. All African companies, including the Belgian Congo and Angola trusts, adhered to the agreement, which again demonstrated that the De Beers monopoly, backed by American bankers, remained unbroken.

The London Metal Cartel

American monopoly also participates, in addition to the diamond cartel, in the major non-ferrous metal cartels along with the peak British and Belgian trusts. Through the copper, zinc, lead, and other metal cartels of the inter-war years, the American monopoly groups made heavy inroads into the preserves of their rivals. There were two principal channels: one through the Canadian monopolies, principally International Nickel; and the other through the copper cartels, in which the American trusts were decisive.

The merger of Mond Nickel into International in 1929 brought the nickel trust full force into the world cartel structure in which Imperial Chemicals was a leading participant. In that year, International Nickel and Consolidated Mining, the Canadian Pacific subsidiary, obtained a leading interest in Henry Gardner & Co. of Britain. This company then joined with the British Metal Corp. to form the Amalgamated Metal Corp. The latter immediately assumed the commanding position, together with the closely associated Imperial Smelting Corp., in the field of British non-ferrous metals—outside of nickel and aluminum, which are controlled by separate world trusts.

In May 1930, the new company became a reciprocal stockholder in Société Générale des Minerais of Brussels, the central refining and sales subsidiary of Société Générale de Belgique. At the same time, Amalgamated Metals also exchanged shares with Metallgesellschaft of Frankfort, thus bringing into a single cartel network the peak metal monopolies of Canada, Britain, Germany, and Belgium.[7]

The cartel relation with Metallgesellschaft was part of the close corporate connections on a broad front between Imperial Chemicals and I. G. Farbenindustrie of Germany, in which du Pont participated in the chemicals field, and other American monopoly groups in metal ores through International Nickel. The chief stockholder in Metallgesellschaft was I. G. Farben. Among the directors of the German metal trust in 1940—that is, after the outbreak of World War II—were two directors of Amalgamated Metal Corp., the medium through which International Nickel participated in the cartel. These were Walter Gardner, president of Amalgamated, and Captain Oliver Lyttelton, the Tory politico-militarist.[8] This corporate relationship throws considerable light upon the appeasement roles of the pseudo-military expert Lyttelton and of John Foster Dulles, now a high priest of the new war alliance.

After the war, while the struggle among the peak monopoly groups for control of the West German corporate network proceeded, Amalgamated Metal Corp. continued as the cartel center* of Canadian, British, and Belgian mining monopolies, with American participation principally through International Nickel. In 1949, its board included Nickel's chairman Stanley, Consolidated's president Stavert (who also in that year became a director of Nickel), and Sengier, the executive director of Société Général de Belgique and managing director of U.M. The board also includes R. M. R. Preston, a director of Rhokana Corp., through which the Morgan group operates in Rhodesia.

This cartel center thus brings together the most powerful mining corporations, outside the American copper and aluminum trusts, in the field of non-ferrous metals. The same corporations also figure prominently in the struggle for control of world uranium, which takes place within the elaborate framework of the world cartel system.

Uranium Via Copper

The same monopolies controlling diamonds, certain non-ferrous minerals, and uranium are to be found at the peak of the complex corporate system that dominates world copper. Here the giant American copper trusts, by virtue of their ownership of the United States and Latin American mines, and their strong position in the companies controlling Canadian and African copper, have for some time held supreme command.

During the inter-war years, the American monopoly groups established control over the newer fields not only by direct participation but also through the international copper cartels that operated from 1926 to the eve of World War II. Participation of the American copper trusts in these cartels was indirect—through their Latin American subsidiaries and the foreign companies in which they had interests—but it was nonetheless effective.

In the process of bringing world copper output under its control, American moopoly extended its participation in the general cartel network dominating raw materials, particularly in the peak South African group. As a leading world copper producer, Union Minière participated in these cartels, alongside the Latin American subsidiaries of the U.S. corporations, and the Rhodesian companies when they entered large-scale production in the early thirties. As a result of the further penetration of foreign copper companies by American monopoly during World War II and immediately thereafter, the United States interests were so clearly dominant that a formal cartel organization no longer seemed necessary for assuring them control of world copper.

The Rhodesian copper fields became a focus of the inter-monopoly struggle for control of new raw-material sources in the decade before World War II. Before the development of the Rhodesian mines, the American copper trusts had been able to maintain a world monopoly by virtue of their control of the copper basins of the United States and Chile. But Rhodesian copper threatened this monopoly. The adjoining fields of Northern Rhodesia and Katanga represented about one-fourth of world reserves, equivalent to the deposits in Chile and also those in the United States. Moreover, the American fields were being rapidly depleted. The United States copper trusts—which maintained a monopoly of this metal from the ore to the fabrication of copper products—were accordingly becoming more and more dependent upon imports of the raw material. The cartels alone would not suffice as a means of regulating output and prices if Rhodesian copper should become "independent" of the American corporations. Therefore, the monopoly forces in control of the American copper trusts, which means primarily the Morgan group, drove for direct participation in the companies then being established to exploit the new deposits. Practically all major monopoly groups concerned with control of raw materials entered this struggle.

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* Amalgamated Metals Corp. acted as the "sales agent" in specified markets for International Nickel, Consolidated Mining, leading British metal companies and the various mining and refining subsidiaries of Société Générale.

In the resulting large-scale entry of American monopoly capital into the Rhodesian copper companies, the Morgan group broadened its participation in the predominantly British corporate complex dominating non-ferrous mining in Africa, and also increased its own direct stake in the imperialist exploitation of that continent.

Rhodesian copper is controlled by a complicated holding system in which two centers of monopoly power can be differentiated. One functions through the Rhokana Corp., which controls the N'Changa group of mines, and the other through Rhodesian Selection, Ltd., which owns the Roan Antelope and Mufulira mines. Each of these holding companies is a combination of various Anglo-American monopoly groups.

Rhokana is controlled through the peak South African monopoly group which commands diamonds and gold, and shares in control of Congo minerals. In 1928, Anglo-American Corp. of South Africa established Rhodesian Anglo-American Corp. as its instrument for financing the copper mines of Northern Rhodesia. As we have seen, the Morgan group is a participant in this parent corporation. Additional Morgan capital was brought into the Rhodesian subsidiary through Newmont Mining Corp., which took part in the formation of the new company.* Then, in 1931, the holding company thus formed consolidated its various copper properties in Northern Rhodesia† into a new unit, Rhokana Corp., which also owns the Rhodesian Copper Refineries, established in 1946.

Rhodesian Anglo-American retained 52 percent of Rhokana's stock, as well as large holdings in the subsidiary mining companies, thus assuring control of this group. Besides the majority interest in Rhokana, Rhodesian Anglo-American owns the Rhodesian Broken Hill Development Co. This company mines zinc on a large scale, as well as lead, and vanadium from which uranium may be obtained as a by-product. It operates a vanadium oxide plant at Broken Hill, the hub of the new British railroad and military project to connect Central and East Africa.

In addition to Morgan participation through the peak South African company and through Newmont, other American financial groups joined in the formation of Rhokana, including the Guggenheims, and T. F. Ryan.[9] But the British retained the dominant position. Oppenheimer, the chairman of De Beers and Anglo-American Corp., is also chairman of Rhodesian Anglo-American and Rhokana, and of N'Changa, which is the principal producing company of this group. C. D. Hely-Hutchinson, brother of the chairman of Tanganyika Concessions and a director of the British South Africa Co., is to be found on the board of Rhodesian Anglo-American. The Morgan group is directly represented on the board of this holding company by president Searls of Newmont.

The other holding center, Rhodesian Selection, is even more complicated, bringing into the Rhodesian network the two peak Anglo-American mining trusts active in Canada and the United States, as well as a number of investment banking groups. In this complex, American monopoly now appears clearly dominant, with the Morgan group apparently the most powerful participant.

Control of this holding company is shared between Selection Trust,

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* In 1948, Newmont held 286,501 shares of Rhodesian Anglo-American, valued at $1.4 million.

† These included: Rhodesian Congo Border Concessions, which held the mineral rights (ceded to it by the British South Africa Co.) to 50,000 square miles in Northern Rhodesia along the border of Katanga, Belgian Congo; N'Changa Consolidated Copper Mines, Ltd.; and Bwana M'Kubwa copper mines, which is also a leading world producer of cobalt.

Ltd., of London and American Metals Co., Ltd., with headquarters in New York.

Selection Trust is the peak company of the financial group headed by A. Chester Beatty,* who was named in a recent study by the Federal Tariff Commission[10] as one of the big six in control of world copper—the others being the heads of Anaconda, Kennecott, Phelps Dodge, Newmont, and International Nickel.

In addition to stock ownership in the operating companies, the Beatty group participates in control of Rhodesian copper through American Metals, Ltd., which holds directly the majority interest (50.56 per cent) in Rhodesian Selection Trust.†

American Metals is itself a major Anglo-American combine, active in the United States, Canada, Mexico, Chile, and Africa. At least up to World War II the largest single bloc of shares in American Metals, about 25 percent, was held by the Beatty group. However, the actual management of the company was in the hands of the Hochschild family of New York, which together with Loeb and other closely associated families held 14 percent of the shares.[11] After the war the Hochschilds still held the top executive posts, while the Beattys—father and son—were among the directors.

Two top banking houses are brought into the combine through the Hochschilds: Kuhn, Loeb & Co., as a result of substantial stock ownership by the Loeb and associated families; and Lehman Bros.,‡ which participated in the financing of Rhodesian Selection Trust.[12]

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* Beatty is a former American mining promoter who moved to London and became a British citizen. He is head of an important monopoly grouplet. In addition to Rhodesian copper, his group has interests in the diamond mines of Sierra Leone, bringing him into the world diamond cartel. Beatty also participates in the gold fields of the Orange Free State together with Union Corp., whose chairman, Brendan Bracken, was Minister of Information in Churchill's wartime cabinet. Beatty's interests extended into the Trepca lead and zinc mines of Yugoslavia.

† American Metals also owns directly 64 per cent of the stock of Mufulira, one of the two subsidiaries of the central holding company, and also manages these mines. The Beatty group seems to dominate Roan Antelope, the other mining company of this system.

‡ The Hochschild-Lehman connection extends into the Climax Molybdenum Corp., which dominates the world output of that metal, used primarily in making alloy steel. Five of the 14 directors of American Metals are on the board of Climax, including the president of the latter who is also a director of Lehman Corp. As shown in Chapter 12, Climax has made a strong bid for the atomic raw materials of the Colorado Plateau.

It will be recalled that John Hancock, a Lehman Bros. partner, was adviser to Baruch on the United States atomic energy delegation to the United Nations, while Lewis L. Strauss, a long-term partner of Kuhn, Loeb & Co., was a member of the A.E.C.

Within this corporate maze, the Morgan group holds a strong position. President Searls of Newmont, another Baruch adviser, is a director of American Metals. The Morgan position was greatly strengthened by one of the biggest postwar deals in metal stocks in October 1948, when Phelps Dodge Corp. bought 10 percent interest in American Metals. Whom they displaced was not clear. In addition, Morgan-controlled Newmont Mining Corp. maintains joint interests with American Metals in two important South African copper-mining companies outside the Rhodesian group. The strong Morgan position in American Metals is enhanced by the close association between the Guggenheims and the Hochschilds.*

A close link also exists between International Nickel and American Metals. The latter's Canadian subsidiary is sales agent for the copper production of International Nickel, while the chairman and executive vice-president of Nickel are directors of American Metals. The link between the two combines is also maintained by Dulles' law firm of Sullivan & Cromwell, which is counsel for both firms, each of which includes a Dulles law partner among its directors.

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* The connection between Guggenheim-Morgan-controlled Kennecott Copper Corp. and the Hochschild-Lehman grouping in American Metals and Climax Molybdenum was dramatically emphasized by a fatal plane accident in Canada in 1949. One of the victims of this crash was Arthur D. Storke, who had just resigned as president of Climax to become president of Kennecott. Storke had been manager for American Metals of its Rhodesian copper mines, and at the time of his death was a director of Rhodesian Selection Trust. He was succeeded as president of Climax and as a board member of American Metals by Arthur H. Bunker, a director of Lehman Corp.

Another victim of the crash was R. J. Parker, a Kennecott vice-president and head of its new subsidiary formed to exploit the Quebec iron deposits. Parker had been associated with the diamond monopoly of the Belgian Congo, in which the Guggenheims have large interests, and was also in 1931 assistant managing director of the Beatty group in London. A third crash victim was E. T. Stannard, Kennecott president who was about to become chairman of the board. He was succeeded by a high executive of Morgan's U.S. Steel trust.

Kennecott and Climax have a common interest in molybdenum, the copper trust having become the second largest producer of that alloy metal. The price has remained stable since 1938, suggesting a cartel-like arrangement between these two corporations, involving also a third major producer (Molybdenum Corp. of America).

As in the nickel trust, a substantial minority position is held in American Metals by the Rockefeller group, which has at least one director on the board of that corporation (a vice-president of Ajax Pipelines, Standard Oil subsidiary), and also exerts influence through its minority position in Phelps Dodge.

Thus, the Morgan interests play a leading role in both peak holding companies which control Rhodesian copper and reach out into other vital African resources. Moreover, the two Rhodesian groups are closely interlocked by common stockholdings and cross-directorships.*

Other finance capitalist groups also appear in this corporate mesh. In connection with the career of Atomic Commissioner Pike, we have already mentioned Case, Pomeroy & Co. as a participant in the Rhodesian copper monopoly. Thorold Field—a Case, Pomeroy vice-president—was at one time connected with the Rhodesian companies, and is now a member of the A.E.C. raw materials advisory committee.

On the British side, still another important monopoly group is brought in, with interests in the Rhodesian holding companies. Minerals Separation, Ltd., has a major interest in the Selection group. Minerals Separation is controlled by the London Rothschilds and the interests associated with that family in Rio Tinto Co., Ltd., which owns the copper and sulphur mines in Spain.† The political role played by Rio Tinto directors in support of the fascist dictator Franco was emphasized again in 1946 when Anthony Eden, Tory heir apparent to Churchill, was added to the board of that company.

This group acquired a strong position in the Rhodesian copper companies because of the control by Minerals Separation of patents for the treatment of ores, a monopoly it has maintained since 1903 when it took over the rights to the flotation process. By virtue of the patent monopoly, Minerals Separation is a force in many branches of the mining industry. The influence of Lehman Bros. in Rhodesian copper is due in no small measure to its connections with the British patent monopoly. These patents are handled in the United States and Canada for the London group by Minerals Separation North American Corp., in which the Lehman interests are strongly represented.*

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* Rhokana owns 26.5 percent of the shares of Mufulira, which is controlled by the other holding center (Selection) while the parent company, Rhodesian-Anglo-American, also owns stock in Mufulira and has four directors in common with it.

† Minerals Separation has a large block of shares in Rhokana and its subsidiary, N'Changa, while Rio Tinto in addition to holdings in this group also has a substantial block of shares in Mufulira of the Selection group. The Earl of Bessborough, chairman of Rio Tinto, is a director of Rhokana; and J. F. Buchanan, chairman of Minerals Separation, is a director of Mufulira as well as Rhokana.

The Beachhead Widens

Union Minière, the trust controlling Congo uranium, is thus part of an intricate corporate network, in which American monopoly has been making constant inroads.

Before World War II, the Morgan and Guggenheim interests had come into the diamond cartel through direct investments in the sister companies of U.M. in the Congo and Angola, as well as through the holding company of the peak De Beers group. The latter connection also gave the Morgan bankers access to the British interests involved with Belgian capital in control of Katanga minerals. Through International Nickel, where Morgan companies share control with du Pont and Imperial Chemicals, the peak finance capitalist group of the United States participated in the London metals cartel alongside the British, Belgian, and German monopoly groups. U.M. was also brought into the formal copper cartels, organized between the two world wars, which were dominated by the Morgan-controlled American copper trusts. And in assuming a leading position in the Rhodesian copper companies, the Morgan group also expanded its influence within the De Beers monopoly complex of South Africa, which shares with Belgian finance capital in control of the Congo.

From these firm footholds, the peak American monopoly group immediately after the war bored more deeply into the De Beers network. The acquisition by Phelps Dodge Corp. of a large bloc of shares in one of the top combines controlling Rhodesian copper enhanced the power of the Morgan group within the African mining empire. At the same time, the transfer of U.M. shares from the British holding company to the Anglo-American Corp. gave the Morgan group a large stake in control of Congo uranium.

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* Of the four directors of the New York patent monopoly, two are connected with the Lehman interests. One of these is Frank Altschul, chairman and largest stockholder of General American Investors Co., and a former partner of Lazard Frères of New York. The investment trust was formed in 1929 jointly by Lehman Bros. and Lazard Frères, but in March 1949 the Lazard partners withdrew, while three Lehman partners remained on the board. Altschul is the brother-in-law of Herbert H. Lehman (of the banking family), ex-governor of New York State and now a senator.

As we have seen, a minority interest in the Tanganyika holdings of U.M. shares was sold to a group headed by the Rockefeller interests. The latter had been engaged in a frontal attempt to break into the Congo domain. In the autumn of 1949, consultations were opened in Brussels between the Belgian government and Winthrop Aldrich, head of the Chase National Bank. As reported in the press, the subject of these talks was the new government ten-year plan for the "development" of Congo resources.[13] As usual it is to be a mixed government-corporate venture, involving an investment of $1 billion. Half the capital is to be provided by the Belgian government, to be used primarily in expanding the transportation system, tripling electric power facilities, and other undertakings helpful to the private companies. The latter are to invest almost exclusively in mining. It was believed that American capital was invited to participate,* alongside Belgian and Swiss.[14]

That a Rockefeller banker should seek participation in the scheme was not surprising, in view of the keen interest displayed by this group in Africa, beyond its traditional sphere of oil. In Belgium, the Rockefeller interests had a long-term connection with the Solvay trust arising from their joint control of one of the big-three American chemical firms. A direct interest in the Congo was acquired after World War II, when Rockefeller Bros., Inc., a family holding company, invested jointly with Belgian capital in a cotton mill in the colony.

Other events indicate the mounting interest of the oil dynasty in African resources on a broad front. In the autumn of 1948 John D. Rockefeller, 3rd, now second in command of the clan, took a two-month trip into Africa for the purpose, as he put it, of obtaining background for the "political thinking" of the Rockefeller Foundation. The itinerary suggests a special interest in Central Africa, from coast to coast, for it included French West Africa, Liberia, Nigeria, Belgian Congo, Kenya and Ethiopia, countries which figure most prominently in Anglo-American military planning. On his return, Rockefeller said he was impressed by the increasing importance of Africa in the world picture, economically, politically and strategically.[15]

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* In September 1951, the International Bank for Reconstruction and Development advanced two 25-year loans totaling $70 million to the Belgian government and to the colonial regime of the Belgian Congo to be used in the development plan.

Obviously, the struggle for control of Congo uranium played no small part in this exploratory journey. As already noted in connection with International Nickel and Phelps Dodge, the Rockefeller group has been expanding into the sphere of raw materials in general. That one of the family moguls should devote his personal attention to Africa (just as Nelson Rockefeller specializes in the older colonial sphere of Latin America) indicates how large African resources loom in the plans of this monopoly group. In view of the Rockefeller effort to expand their foothold in the American atomic enterprise, control of Congo uranium was certainly a major objective. But in this sphere, as in the American nuclear weapons industry in general, the Morgan group had the advantage. The Rockefellers succeeded in wresting a bloc of uranium shares from the De Beers-Morgan monopoly, but the Morgan group retained the stronger position in this corporate network controlling the richest African resources.

Thus, the monopoly group which is preeminent in the American nuclear weapons business also enjoys the advantage in the struggle for control of world uranium, in Africa as in Canada.

Now we can more clearly understand why the men of the copper trusts, and of the banking houses most closely associated with them, play such a prominent role in atomic diplomacy. Baruch of the Guggenheim-Morgan copper empire, Dulles of International Nickel, Osborn of the Phelps Dodge family, Searls of Newmont, Hancock of Lehman Bros., Strauss of Kuhn, Loeb and later with the Rockefellers—these are the "American" spokesmen for an atomic energy "control" scheme which is but a feeble front for the atom bomb business. When these and others like them orate on the "humanitarian" motives of the Baruch Plan and hurl their accusations against the Soviet Union, it is well to remember that they represent the corporate interests straining to corner world uranium.

PART V ATOMIC DIPLOMACY

17. The World Cartel

FOUNDED DURING WORLD WAR II, the international nuclear weapons cartel has been carried forward through corporate and political channels into the present period of new war preparations. It exceeds in scope, power and war incitement any previous world armaments trust.

The cartel stands at the very apex of present-day imperialism, incarnating the fusion of the militarized state with monopoly on a global scale. It is led by the peak world monopoly groups, whose companies run the American industry and whose delegates dominate the domestic and foreign policy committees. As in the United States, also internationally, it is dominated by the most powerful existing cartels in chemicals, electronics, and strategic raw materials. Everywhere it operates behind the façade of government control, while utilizing for its own expansion and consolidation the apparatus of state and of international diplomacy.

Britain's Atomic Start

On November 15, 1945, the heads of the American, British, and Canadian governments announced jointly their intention to open discussions in the United Nations on world control of atomic energy. In some unsuspecting quarters this was hailed as the beginning of an era of co-operation for the beneficent use of atomic energy. In reality, the announcement was but preliminary to feverish atomic armament in the United States, within the framework of a nuclear weapons cartel which in its essentials had already been established.

The basic structure of the atom bomb industry had been erected in the United States. Its product had been secretly tested at Alamogordo, New Mexico, and in actual warfare at Hiroshima and Nagasaki, with the murder of almost 200,000 Japanese civilians. Behind the cover of utmost military secrecy, the pattern of corporate control over the industry was established. The initial stages of the industry in Britain and Canada were completely subordinated to the American undertaking. The pitchblende production of Canada and the Belgian Congo was monopolized. The atomic bloc of the United States, Britain, and Canada was formed.

The most likely competitor to the United States was Britain. Except for the United States, it was the only country in which substantial progress had been made toward the development of atomic weapons before the massive American enterprise was begun. In fact, Sir James Chadwick, the discoverer of the neutron and the chief British participant in the invention of the atom bomb, expressed the opinion that in 1941 Britain led the world in this field.[1] British leadership in basic atomic research, and even in some phases of preliminary development, may have continued into 1942. Rutherford with his early work on radioactivity and the structure of the atom, and also the British physicists who followed him, made major contributions to fundamental knowledge. The Thomson committee of nuclear scientists, set up in the Air Ministry in the Spring of 1940 to investigate possibilities, reported as early as July 15, 1941, that the atom bomb was definitely feasible and should be pursued on a large scale. By September of that year the War Cabinet had authorized the project.

These actions in Britain, surrounded with an atmosphere of great urgency, played no small part in hastening the American development. On November 6, 1941, the Reviewing Committee of the National Academy of Science, on the basis of preliminary research carried on in the United States with the help of anti-Hitler European scientists, and as a result of consultations with the British, also agreed that the atom bomb was feasible. In the following month, the decision was made to enlarge and reorganize the research program, which until then had been of minor proportions.

In the period from the outbreak of World War II to 1943, when British efforts were transferred to the United States, initial steps had been taken toward establishing an atomic industry in England.[2] As in the United States, the chemical and electrical equipment trusts played the leading role.

When the War Cabinet decided to proceed with the atom bomb, Churchill appointed Sir John Anderson to supervise the project. A top Tory leader and Cabinet member, Anderson was and still is a director of both Imperial Chemical Industries, Ltd., and Vickers, Ltd., the great British armament trust. As chairman of the original Consultative Council and later as head of the Committee on Atomic Power, Anderson was boss of the British atomic industry in its postwar as well as its initial phases. He set up at once a special organization, known as the Directorate of Tube Alloys, to run the new project, and placed in charge W. A. (now Sir Wallace) Akers, a director and official of Imperial Chemicals. Akers brought along with him from that trust M. W. Perrin to act as his deputy. Akers was chairman and Perrin secretary of the Technical Committee, composed of leading British atomic scientists, which was formed to advise on the work.

Hereafter, Imperial Chemicals and Vickers completely dominated the panels and committees of Tube Alloys. On the Diffusion Project Committee, the most important of the co-ordinating bodies, 10 of the 15 members were from Imperial Chemicals and two from Metropolitan-Vickers Electrical Co., Ltd. Imperial Chemicals supplied five of the seven members of the Chemical Research Panel, and at least three of the seven-member Metal Panel. Akers and Perrin were on the three-man Patents Committee, which determined what inventions were applicable outside the atomic energy field and therefore the property of the industrial laboratory in which they had been developed.

In the operations of the project, as on the program committees, Imperial Chemicals and the electrical equipment affiliate of the Vickers armament trust were practically the only industrial participants. During 1940, both companies had worked jointly with the committee of scientists in the Air Ministry to determine the feasibility of the new bomb. In the Tube Alloys project, Metropolitan-Vickers made certain model machines according to principles worked out by the British atomic scientists, and "contributed" a number of its engineers to the enterprise. Another electrical firm, the British Thomson-Houston Co. (with which General Electric of the United States, at least in the past, had close connections), also placed some scientists in Tube Alloys.

As in the United States during the war, the chemical combine played the leading role. Imperial Chemicals undertook the most extensive program of the project, the development of the gaseous diffusion plant as a whole, including research on new materials of construction, the complicated components of the process, and the final design. Its affiliated Mond Nickel Co., which had merged into International Nickel of Canada, participated in various metallurgical aspects of this work. Another subsidiary, General Chemicals, worked on the fabrication of purified uranium metal, while the parent trust prepared to manufacture heavy water on a large scale.

Even in the initial phase of the atomic industry in England, the basic elements of the weapons cartel were already present. The companies dominating the British project had long-term corporate and cartel relations with the American trusts controlling the Manhattan District. When Sir John Anderson visited the United States in August 1943 to arrange for the joint Anglo-American enterprise, he found his old cartel cronies of the du Pont trust well entrenched around General Groves, and the du Pont company itself in charge of the most important operations. General Electric, an intimate associate of the Vickers electrical combine, was also playing a prominent part.

The nuclear weapons cartel then taking shape was erected upon the foundations of the established world corporate structure. Cartel relations between du Pont and Imperial Chemicals date back at least to 1920, when the two firms exchanged patents and divided markets in numerous products, including explosives. With the consolidation, in 1925, of the British chemical trust in its present form and the resulting command of Empire markets, the cartel was extended upon a world scale in agreement with I. G. Farbenindustrie of Germany. Close co-operation between du Pont and the British trust led to the formation of a jointly-owned subsidiary, Canadian Industries, Ltd., and the collaboration of the two groups, alongside the Morgan interests, to control International Nickel. Thus the trusts at the peak of both the American and British atomic projects had in common a long period of cartel collaboration, which favored the joint effort in the Manhattan District, and its offshoot in Canada, and also reached into control of Canadian uranium.

The electrical cartel is even older, going back to the 1890's, when exchange of information and patent agreements involved all the present large producers. In the operations of the international lamp cartel, and later of the electrical equipment cartels, General Electric of the United States came to own large blocs of shares in the foreign trusts.* From 1930 to 1947 General Electric together with Westinghouse participated in a world-wide cartel organization, divided into numerous operating sections and covering all types of electrical equipment, which allocated markets among themselves and the leading trusts of Britain, Germany, and other countries.[3]

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* By 1929, General Electric (U.S.) owned 29 percent of the stock of Osram, dominant German lamp producer; 17 percent of Philips, the Dutch trust; 44 percent of Compagnie des Lampes, a leading French producer; 40 percent of Tokyo Electric Co.; 34 percent of General Electric, Ltd. (England); and 46

The electrical trust most prominently engaged in the British atomic enterprise is controlled jointly by Vickers and General Electric of the United States. Metropolitan-Vickers Electrical, Ltd., is a subsidiary of Associated Electrical Industries, in which the parent Vickers combine holds the major interest. On the eve of World War II, General Electric owned 46 percent of the stock of Associated. Randal H. V. Smith, a London representative of J. P. Morgan & Co., is a director of Vickers Ltd. This peak combine is also believed to maintain joint interests with the Morgan group in the Electric Boat Co. of New York, the leading builder of submarines. From the period preceding World War I, Vickers and Electric Boat have divided world markets between them, shared profits, and exchanged patents.[4] This historic connection is now of special interest since Electric Boat has the Navy contract for the construction of the hull of an atomic-powered submarine.

Within the British corporate and state structure Imperial Chemicals and Vickers play a role no less important than the Morgan and du Pont monopoly groups in the United States. As we have seen, the latter groups often collaborate in joint projects. The history of the Manhattan District as well as of the A.E.C. suggests that they have divided the atomic field cartel-fashion among them. Imperial Chemicals and Vickers, the two most powerful British trusts (incidentally, excluded from the so-called nationalizations of the British Labor Government) are also very close collaborators, as is indicated by the presence of Sir John Anderson on both boards of directors. Another Imperial Chemicals potentate, Sir Andrew Duncan, is head of the steel syndicate, which is dominated by Vickers. The leading lights of both trusts have long been Tory stalwarts, and play a prominent role in British governments no matter which party is in power.

Thus, in the initial phase of the atomic industry, from 1940 to 1945, the controlling monopoly groups in both Britain and America had a long-term community of interest. Imperial Chemicals-Vickers in Britain, and du Pont-Morgan in the United States, with a long background of inter-monopoly and cartel relations between them, dominated atomic development in their respective countries.

Consolidation of U.S. Control

In the cartel which developed from this community of interest, the American trusts easily gained the upper hand. This was due principally to the specific circumstances of World War II. Dangerously exposed and greatly weakened, Britain was in no position to mobilize the resources required to build the atom bomb. On the other hand, the United States, remote from the theaters of war, could muster plentiful resources of its own, and bring to its shores scientists of many countries.

By 1942, the United States was ready to concentrate lavish resources upon the development of atom bombs. The British Cabinet accordingly decided against building full-scale atomic production plants in England, and limited the work to experimental research, the design and construction of prototype machines, and the manufacture of uranium metal and heavy water. Scientific missions were exchanged between Britain and the United States, and the co-ordination of preliminary research was begun.

The first step to transfer the major British effort to North America was taken at the end of that year. Plutonium research was moved to Montreal, where facilities were made available by the Canadian government through the National Research Council. The work at the Anglo-Canadian center was co-ordinated with the Metallurgical Laboratory at Chicago, and the Montreal establishment soon became in effect a tripartite project. In the spring of 1944, construction of an experimental plutonium reactor was started at Chalk River, near Petawawa, Ontario, and it was in operation by September 1945. Heavy water for the reactor was supplied from the plant at Trail, which had been constructed by the Standard Oil Development Co. R. E. Newell, of Imperial Chemicals, directed the basic engineering design of the Chalk River plant, while other scientists and technicians associated with the British chemical trust and Canadian Industries, Ltd., the du Pont-Imperial Chemicals combine, participated in the work of the Montreal group.[5]

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percent of Associated Electrical Industries, Ltd., (Stocking and Watkins, *Cartels or Competition?*) It also developed substantial interest in A.E.G. of Germany and in British Thomson-Houston Co., Ltd., dating back to the organization of these companies by the predecessors of G.E. (U.S.). Westinghouse maintained close relations with English Electric Co. and the French Schneider-Creusot armament trust.

However, the Canadian undertaking was peripheral to full-scale operations in the United States. Following Sir John Anderson's visit in August 1943, and the decision reached at the Quebec Conference of the United States, British, and Canadian heads of government to concentrate the atomic industry in North America, a three-power Combined Policy Committee was established in Washington. Under the direction of this body the British suspended independent efforts to make a bomb, and transferred 75 scientists, including the nuclear physicists of Tube Alloys, to the United States. Here they participated in the work of the Manhattan District.

Taking advantage of the wartime weakness of Britain, their own command of resources, and the services of many leading scientists from abroad who had come to the United States to work on the project, the American monopolies were able to establish their unchallenged supremacy in the new field. Soviet participation was meticulously avoided, foreshadowing the postwar era of atomic diplomacy. The British were given general access to the new process. At Los Alamos the British mission headed by Sir James Chadwick acquired "a thorough and complete knowledge of all the bomb work," according to former Atomic Commissioner, Dr. Bacher. They were closely associated with the research at the Radiation Laboratory, with the separation research and development at Oak Ridge, and through the Montreal project with the work on reactors at the Metallurgical Laboratory.

Nevertheless, in the huge industry thus created in the United States the American trusts had gained the head start and had seized the commanding positions from which they could dominate the new technology in the capitalist world. Simultaneously, by inter-government agreements during the war the output of the uranium mines of Africa and Canada was cornered for the American industry. Complete control of these resources was still to be secured by the Wall Street trusts, but the preclusive monopoly of uranium continued after the war.

By the end of the conflict, the framework of the nuclear weapons cartel had been erected. Its essential elements were: (1) the concentration of the weapons industry in the United States; (2) the preclusive American buying monopoly of uranium; (3) the domination of the industry by the chemical and electrical equipment trusts; and (4) the protection of the American monopoly position by strict regulation of atomic developments in other Western countries through governmental agreements.

Subsequent development was confined within this general framework, although the British made efforts to improve their relative position. Having been forced during the war to concede the weapons monopoly to the United States, the British now attempted to make up for lost time. On the return of their scientists from America, the projects temporarily suspended were resumed. The gaseous diffusion plant, similar to the Oak Ridge establishment but with some novel features, was placed in operation at the Billingham division of Imperial Chemicals. Work was also resumed in 1945 by Metropolitan-Vickers, General Electric, Ltd., and the British Thomson-Houston Co. on the electromagnetic process for the making of enriched uranium. A development center was established at Harwell, headed by Sir John Cockcroft who had directed the Canadian atomic laboratories during the war. By 1948, two low-energy experimental reactors were in operation at Harwell, and other installations were planned or under construction.

As in the earlier phase, Imperial Chemicals and Vickers dominate the industry. At Springfields the chemical trust operates a plant for refining uranium, and at Sellafield in Cumberland an establishment for producing reactors. Thorium, Ltd., is in charge of the Radiochemical Center at Amersham for packing and distributing isotopes. In addition to these centers, the Ministry of Supply also has a design establishment at Risley in Lancashire. Research machine power, although far below that available in the United States, permits advanced experimental work. The largest machines include a 200-million electron volt cyclotron at Harwell, and a 300-million electron volt cyclotron constructed by Metropolitan-Vickers. Lord Portal, wartime chief of the Air Staff, is Controller of Production under the Ministry of Supply. His deputy is M. W. Perrin, the same Imperial Chemicals man who was deputy to Akers in the wartime atomic project.[6]

Although the Canadian enterprise is practically a branch of the American atomic industry, a modest but significant start has been made. The Chalk River establishment now has an experimental 10,000 kilowatt reactor, using uranium and heavy water, in addition to its original zero-energy pile. Between 1945 and 1949, the Canadian government spent over $36 million on atomic development, which includes the construction of medium-powered research machines and the support of nuclear physics programs at the leading universities. Here, too, the same corporate complex dominates the enterprise as in Britain and the United States. Canadian Industries, Ltd., did the process construction at Chalk River under contract with Defense Industries, Ltd., a Crown company.[7] The American electrical trusts either directly or through their Canadian subsidiaries supply most of the electronic equipment and research apparatus. According to W. Bennett Lewis, director at Chalk River, the Dominion atomic undertaking "stops short of any direct interest in or knowledge of atomic weapon construction ."[8]

Shut out from the main sources of raw material, and deprived even of the information developed by their own scientists in the American wartime project, a number of other capitalist countries have uncovered low-grade domestic uranium ores and are proceeding with experimental reactors and nuclear research. But this activity is severely limited by the dictates of United States policy, and is confined generally to the established corporate structure of the industry.

Under pressure from the United States, Frédéric Joliot-Curie, the foremost French nuclear scientist and an initiator of the Stockholm Peace Pledge, was ousted from his post in 1950 as director of the research establishment at Chatillon, where two small experimental reactors are in operation. Before the Germans completed the occupation of France during World War II, his most prominent co-workers in nuclear research, H. Halban and L. Kowarski, on instructions from Joliot-Curie, had succeeded in escaping from France with the largest supply of heavy water then available in the West, and joined the wartime atomic project first in Britain and later in Canada. Under his inspiration and leadership after the war, the group of French nuclear scientists at the national establishment devoted their energies to basic research and to the application of atomic energy for peaceful purposes. The removal of Joliot-Curie weakened irreparably a research center which was on its way to rivaling in fundamental work the elaborately equipped laboratories of the A.E.C., and cleared the way for the subordination of French science to militarized research in the United States.

In the Scandinavian countries significant progress was also made in the field of nuclear physics. In Norway a reactor was under construction in 1950 at Kjeller, near Oslo, similar to the first experimental pile at Chalk River. Sweden is also building a small reactor and, like Norway, has a number of medium-powered research machines. These projects are controlled jointly by corporations and government agencies. In Sweden operations are run by the Atomic Energy Corp., a joint enterprise which is financed and directed on a half-and-half basis by industrial companies and the government.

In Norway, where work is more advanced, the atomic enterprise is controlled by the Institute for Atomic Energy Studies, owned half by the government and half by Norsk Hydro (Norwegian Hydro-Electric Corp.), which before the war was the world's largest producer of heavy water. During World War II, its plant was the objective of two heroic commando raids, in which a number of Norwegian scientists, together with other brave men, lost their lives. The plant was seriously damaged, and the Germans were deprived of a shipment of heavy water destined for bomb research.[9]

Norsk Hydro, the corporation now dominating atomic research in Norway, is an old participant in the world chemical cartel. Together with Imperial Chemicals and I. G. Farben, it composed the so-called DEN group which dominated the synthetic nitrate cartel in Europe from its formation in 1926 to its peak in 1938. The cartel was extended to include the Chilean producers of natural nitrate, controlled by the Guggenheim interests, as well as du Pont and other American chemical companies.[10] The nuclear enterprise in Norway is thus well connected with the corporate complex dominating the major sectors of the world atomic industry.

Similarly, enterprises in a number of other countries are within the familiar framework. In India, the main effort centers in thorium, controlled by Imperial Chemicals and abundant in that country. In the Netherlands, nuclear research gravitates around the large cyclotron at the Eindhoven plant of the Philips Co., a top participant in the international electrical equipment cartel. When the experimental reactor at Kjeller, Norway, had its first test run in July 1951, it was reported that the Dutch were participating in the project on a joint basis.

Beginnings of an atomic industry in these and other countries are in the main extensions of the principal cartel structure, dominated by the Anglo-American chemical and electronics trusts and dependent upon the United States for access to raw materials. In terms of the scope of their activities, technology, and production of nuclear fuel all other capitalist countries play only a minor role compared with the giant American enterprise. As far as is known, the only atomic weapons fabricated in the West are produced in the United States. Only Britain among these countries makes both types of nuclear fuel—plutonium and enriched uranium. However, it is questionable whether available raw material (as well as production capacity) permits Britain at present to make enough nuclear explosives for anything but a few weapons although it possesses both the "know-how" and the means to expand its atomic industry.

State Aspects of the Cartel

A common characteristic of the atomic enterprises in the various countries is the very close integration of state and corporate control. The establishments are either owned in their entirety by the governments, as in the United States, Britain, and Canada, or jointly by the state and private corporations, as in Norway and Sweden. In all cases, the industry is regulated by governmental control boards, while the actual establishments in practically all countries are managed by the large industrial companies under contract with the state.

The interlacing of state administration and the corporate system established the pattern of a super-cartel, backed by the power of the state. This type of a cartel is not new, having been developed to a high level by Nazi Germany, particularly in seizing control of the economies of occupied Europe during World War II, through such instrumentalities as the Hermann Goering combine. The state cartel was also used by the Japanese monopolists to allocate among themselves the loot of occupied Asia. In different forms, state-sponsored international cartels were used by Britain, the United States, and other powers, especially to control certain raw materials like coffee, tin, and sugar.

As concerns the United States, the nuclear weapons cartel signifies a new peak of power for the state-monopoly system. Covering an entirely new and massive industry from raw materials to the finished weapon as well as all other possible applications, the cartel is dominated by the monopoly groups which now stand at the apex of the economic structure of the capitalist world. Probably no single cartel has played so powerful a role in the making of national policy and in the incitement of war.

From the very beginning, the international cartel assumed a state character. The Combined Policy Committee, established in 1943, was the specific inter-governmental agency through which the United States co-ordinated atomic development in Britain and Canada with the American bomb project. After the war, this agency continued as the tripartite policy co-ordinating center, composed of the top state and diplomatic representatives of the respective governments. It includes the two most important members of the President's cabinet (the Secretaries of State and of Defense) as well as the Chairman of the A.E.C., and two British members and one Canadian.

Dominated as it is by the United States government, the main function of the Combined Policy Committee is to prolong the basic relations established during the war which gave the United States the monopoly of atomic weapons in the West. If the wartime co-operation between the British and French scientists were resumed, and if the British monopolies were to take full advantage of their share in the trusts controlling African and Canadian pitchblende, the United Kingdom might indeed become a formidable competitor. Imperial Chemicals, Vickers, and the South African monopoly group could not easily be dismissed as a standing and potential threat to the American atomic monopoly, despite the great head start and superiority of resources enjoyed by the latter. Accordingly, these potential rivals had to be taken into the cartel, the better to control them.

The Combined Policy Committee became an instrument for keeping the nuclear weapons industry strictly within the United States, behind its "security" barrier, while a heavy hand was kept upon atomic development in other countries. True, the policy operated under the general program of the new war alliance against the Soviet Union, culminating in the Atlantic Pact, the Holy Alliance of our day. But the first victim was British atomics, which was subordinated completely to the nuclear munitions trust of the United States.

When the British scientists returned from America at the end of the war, the United States began to clamp down on the exchange of information. Under terms of the Atomic Energy Act of 1946, the release of information relating to weapons development and including the most vital data in nuclear physics was expressly forbidden, pending an "international control agreement." Participation by British and other foreign scientists in the American enterprise came to an end. While the British scientists who had taken part in the Manhattan District were fully abreast of developments during the war, they were now cut off from the new techniques and improvements of the postwar industry. The agreements which gave the United States the lion's share of uranium were kept in force.

Furthermore, the Combined Policy Committee placed severe limitations even upon the release of information developed jointly during the period of wartime collaboration. This was done through the common Declassification Guide, revised periodically at tripartite conferences. In practice, this resulted in denying to the British and Canadians the right to utilize broadly, whether in industry or medicine, the scientific and technical development to which they had contributed during the war and which they were currently expanding. By placing a vital area of atomics and related technologies within the category of classified or secret data, the Guide hindered their utilization for peaceful purposes. With the increasing militarization of atomics and all its works, the Declassification Guide became constantly more restictive, despite claims to the contrary. Thus, shortly after Truman ordered full speed ahead on the hydrogen bomb, a special declassification conference was held in February 1950. It can be assumed that this conference devoted its prime attention to the classification of the entire range of research concerned with processes relating even remotely to the hydrogen bomb, rather than with the declassification of additional information.*

The Combined Policy Committee also kept so-called co-operation to a minimum. In the ever-pressing sphere of raw materials, where the British were straining to increase their allocation, the agency sought to obtain British assistance in locating, mining, and processing of ores, without in return increasing the British share of material. Beginning in 1947, annual three-power conferences were held on these subjects.

Early in 1948, the area of "co-operation" was extended slightly to include certain peripheral questions. According to Truman's statement of July 28, 1949, "In January 1948, the three governments agreed upon a *modus vivendi* which provided for co-operation among the three countries involving exchange of scientific and technical information in certain defined areas and collaboration on matters of raw material supply of common concern." A Technical Co-operation Program was initiated strictly outside the sphere of weapons, operating under the general direction of the Combined Policy Committee. But the program did not go beyond certain problems in the area of health hazards arising from atomic development—such as radiation tolerances, detection instruments, and reactor safeguards—and isotopes for certain types of research. With respect to the latter, as already indicated, American exports were confined largely to certain work in biological research. Britain and Canada, now producing more than enough isotopes for their own use, also limited their exports in accordance with a similar policy.

As a result of postwar atomic development in England, the relative British position had improved somewhat, and dissatisfaction grew with the ironclad American domination over nuclear weapons. However, in line with the subordinate position of Britain in the Anglo-American bloc, British atomics remained for all practical purposes an adjunct of the American weapons industry. As late as 1948, Edward A. Shils, a University of Chicago professor then in London, summed up a debate on atomic policy in the House of Lords as follows:

"It showed once more that because of the extraordinary difficulty of the situation and the unwillingness to do anything that might affront the United States (especially on a matter which is less urgent than Britain's economic needs), the British government has no independently developed line of policy on atomic energy."[11]

However, the British continued to press for broader participation in the new weapons cartel dominated by the United States. At various times the press has reported sharp differences in Anglo-American conferences on atomic energy over questions of the allocation of uranium ores, exchange of technical information, and the right to make atomic weapons. These differences apparently became very sharp toward the end of 1949, alongside other questions in dispute around the formation of the Atlantic war alliance.

Shortly after Truman had conceded that the Soviet Union had mastered the atomic techniques, a top Anglo-American-Canadian conference was held in Washington. According to a statement on October 5, 1949, by James E. Webb, Acting Secretary of State at the time, "a wide range of possibilities were explored looking toward a partnership in the field of atomic energy based on the most rational and economical joint utilization of materials, techniques, and knowledge available to the three countries." The conference ended in an "exchange of views" to be considered further by the respective governments.[12] A month later, Prime Minister Attlee reported "good progress" to Parliament and announced that talks were about to be resumed.

From the tenor of Webb's statement, it seems obvious that, in reply to British demands for greater participation, the United States government had increased its pressure to bring the British effort more thoroughly under American domination. For the first time "partnership" had been mentioned in an official statement, under conditions which would mean the absorption of the British effort in the American enterprise. This is the only interpretation that can be placed upon Webb's stipulation on the "most rational and economical" use of materials, techniques, and knowledge. In this respect, the nuclear weapons cartel is no different from other cartels, in which the strongest participant seeks to eliminate or absorb the weaker.

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* In November 1950, almost a year after this conference was held, it was announced that the Guide had been revised to permit the release of information on low-power research reactors of certain types. This meant little, since such reactors exist in a number of countries and their operation is well understood.

Little immediate progress was made. According to press accounts of what was going on behind the scenes, high American military circles were demanding as the prerequisite for "co-operation" that Britain drop plans to make atom bombs, while the State Department favored a softer approach.[13] On their part, the British seem to have implied that if the United States continued to withhold vital information they would retaliate in kind by refusing to transmit data on atomic weapons other than bombs, on which they were working.[14] But these altercations seemed part of the normal procedure of bargaining, on the basis of the kind of "partnership" indicated earlier. For on January 4, 1950, the *New York Times* reported that the British Labor Government had sent Washington detailed proposals for an atomic treaty, which were viewed by the military, the State Department, and the A.E.C. as a "hopeful basis for agreement." According to this account, the plan was motivated by the belief that "more and better weapons could be produced in the West in less time by working on a single weapons project in the United States."

The essence of the British proposals was given as follows: (1) Britain agrees not to produce atom bombs, but would like to continue its investigations of other atomic weapons; (2) as Canada had already agreed, Britain would permit its scientists to work on atomic weapons in the United States; (3) the United States is to supply some atom bombs for storage in the United Kingdom, and not, as had been proposed, in the United States or Canada for British use; (4) Britain would turn over all information at its disposal for use in the "unified" atomic weapons establishment, but the United States was also to share its information on all joint projects; and (5) these conditions were to be incorporated in a three-year agreement, to be approved by Congress and, therefore, to have the status of a treaty.

It remained to be seen whether even this abject surrender by the Labor Government would prove acceptable to the American atomocracy, which wants to take everything and give nothing. Actually, whether Britain were to gain the privilege of storing a few atom bombs, or the right to share information and to carry on some independent research on nuclear weapons was of little consequence in view of what she was reported ready to concede. For all this would be of little avail if Britain again were to suspend its atomic industry, place its scientific personnel at the disposal of the American weapons business, and accept a complete monopoly of uranium supply by the United States, as this plan would necessitate. The acceptance of such a scheme would mean the restoration of the situation prevailing during World War II, when all British efforts were concentrated in the Manhattan District. It would prove the death knell of the atomic industry in Britain and the end of independent scientific work in nuclear physics. It would be the cartel at peak maturity, with the minor partners merged into the supreme American monopoly.

18. Control of Atomic Weapons

BY 1948 DISCUSSION in the United Nations on control of atomic energy had reached a stalemate. It may be difficult for many Americans to accept the fact that their government is responsible for the impasse. They have been led to believe the United States came to the United Nations with a generous offer to share the secrets of atomic energy and outlaw the bomb itself, while the Soviet Union refused to accept measures of control over its own atomic industry. Neither of these assumptions is correct.

The American plan, presented by Bernard Baruch to the Atomic Energy Commission of the United Nations on June 13, 1946, was in effect the diplomatic expression of the nuclear weapons cartel already in existence. Its basic provisions had been supplied by the Acheson-Lilienthal Report, drafted by Morgan potentates with the assistance of atomic bomb scientists. The only new basic feature added by Baruch was the demand for abolition of the veto power in the Security Council on all matters pertaining to atomic energy.

The Baruch Plan in turn became the core of the proposals accepted by the majority of the A.E.C. of the United Nations, as presented in the first three reports to the Security Council. The fundamental principles of the Acheson-Lilienthal Report, the Baruch Plan, and the majority position are identical, the latter being only an elaboration of the American proposals.

It is well to keep in mind what is meant by the "majority." Of the six Sponsoring Powers and permanent members of the Commission the Soviet Union was a minority of one. The United States, Britain, Canada, France, and "China" formed a single bloc, and to assure the bloc of a majority, they could always muster another vote from among the five nations elected to the Commission.

The decisions and reports of the Commission can in no sense be considered a consensus freely reached by independent powers. The atomic industries of Britain and Canada, and raw materials controlled by them, had been subordinated completely, since the period of the Manhattan District, to the monopolies in charge of the atom bomb industry in the United States. The Kuomintang representatives could always be counted upon to vote with the United States, being totally dependent upon American handouts and patronage and, moreover, entirely unencumbered by atomic interests of their own. France was becoming more and more dependent upon American loans and arms. The tripartite atomic bloc of the United States, Britain, and Canada, supported by dependent France and the Kuomintang "government," in effect constituted the "majority." They were able to muster the necessary show of hands either in the Commission or in the Assembly for the majority plan, which had been dictated originally by the United States.

Since the United States was in a position to determine the outcome, the responsibility for failure rests all the more heavily upon this country. At the end of the war it was the only nation making atom bombs, and it was in possession of facilities for large-scale production. It had used the weapon in the closing days of the conflict without moral or military justification. The barring of the Soviet Union from the secret bomb project during the war was sufficient to rouse warranted suspicions that the weapon was intended for postwar rearmament against the erstwhile ally. If the peace claims of American diplomacy were to be taken seriously, it devolved upon the United States to scrap the bomb, turn the new and immense technology to peaceful purposes, and present a plan to assure world atomic disarmament and control that would not impede industrial atomics in other countries.

Baruch's Cartel Scheme

Instead, a plan was presented which no one in his right mind could expect the Soviet Union to accept and which was only too obviously directed toward maintaining an overwhelming superiority of nuclear weapons in the United States. The Baruch Plan was an extension of the entire line of policy which had resulted in the nuclear weapons cartel, the U.S.-Anglo-Canadian atomic bloc, and the atom-bombing of Japan.

The American or majority plan was aimed in the first place at a system of global control over atomic energy, fashioned after the pattern already established in the American industry. It sought to extend on a world scale the state-monopoly combination characterizing the atom bomb business in the United States and associated countries. Based on the specific interests of capitalist monopoly, both economic and strategic, it ignored completely the special requirements of nations with a socialist system of society. The plan went so far as to envision the taking over of vital sectors of the socialist economies, and intervention into national affairs on a broad front.

Quite aside from the question of whether its advocates ever seriously expected Soviet acquiescence, the scheme in revealing detail provides the pattern for a world-wide state cartel. This would be legalized through the United Nations by the same kind of majority that sustained it in the Commission, and would be dominated by the monopolies already in control of the American atom bomb industry.

That was the price to be exacted before prohibition of nuclear weapons would even be considered. It was the kernel of the American position that its plan would have to be accepted as a whole and put into effect over an indefinite period of time, during which the United States would continue to stockpile atom bombs, before the elimination of this weapon from national armaments could be undertaken. Contrary to the popular impression, the plan did not propose the total prohibition of nuclear weapons, nor did it guarantee that the United States would agree in the end to destroy its own weapons stockpile and cease making bombs.

The first principle expounded in the majority plan, according to the official summary,[1] is that decisions concerning production and use of atomic energy for any purpose should not be left in the hands of individual nations. Instead, each country was to entrust an international control agency with complete authority over the atomic industry, from raw materials to the use of finished products, and including enterprises supplying equipment and materials.

For the professed purpose of preventing production of weapons, the proposed agency would set limits upon the quantity of nuclear fuel to be produced in any country, restricting output in accordance with its judgment of the amount needed for beneficial use. Allowable quotas of radioactive ores to be mined, production facilities, and the level of output of nuclear fuel would be established in advance, in accordance with a concept of "strategic balance." Throughout the discussions in the United Nations, this concept was never elaborated beyond the general statement that allocations should be made with a view to minimizing military advantage to an aggressor from seizure of facilities and stockpiles located within the aggressor country.

The international agency is to own, operate, and manage all "dangerous" facilities. These are defined as "all chemical and metallurgical plants for treating key substances and all facilities capable of producing isotope separation plants, primary reactors and secondary reactors" —in other words, the entire production apparatus of the industry. The right of ownership is to reach back to the source material, once it is removed from the mines, mills, and dumps. These could operate under private or state ownership, but only by license from the control agency. Ownership would also extend to the nuclear fuel, except for tiny research quantities, whether produced in the properties of the agency or in "non-dangerous" facilities licensed by the control body.

Moreover, the agency would decide whether a process or facility is "non-dangerous" and available for licensing to a private operator or a nation. In such a case, the control body would have the power to make inspections, conduct accountings, require certain operating procedures, and maintain guards. If in its judgment a violation has occurred, the agency could modify the license or revoke it, taking possession of the nuclear fuel and padlocking the facility.

The right of ownership and licensing is thus the cornerstone of the majority plan, as it was of the Acheson-Lilienthal and Baruch proposals. The only new thing added after two years of deliberation was the subtle point, offered by the French, of treating ownership as a "trust exercised on behalf of signatory States jointly." But this in no sense changed the basic proprietary provisions, since the agency would possess all privileges of ownership in the most exclusive sense over the entire range of the new technology. As the official summary puts it:

"Ownership by the agency of source materials or nuclear fuels includes the exclusive right to move or lease the materials, the right to use them and to produce energy from them, and the same rights for all products formed from them. . . . Ownership also includes the principle that no disposition of material can be made without the permission of the agency. Ownership by the agency of facilities includes rights of possession, operation and disposition."[2]

Thus, the rights of ownership are to extend beyond the nuclear industry proper to include the facilities using nuclear products, be it for electric power, transport, industrial technology, or research and development.

Possessing outright the atomic industry wherever it may operate and controlling all peripheral activities, the agency would also have the power of unhampered inspection of any part of the territory of signatory nations, beyond those facilities owned or licensed by the international authority. Surveys and explorations could be conducted in any territory to discover and determine world supplies of uranium and other source materials. Air surveys would be allowed, not only over areas known to contain raw materials but also for the purpose of detecting unauthorized activities, and military reservations and installations would not be exempt. Certain conditions were placed around these powers in the elaborated majority reports, such as obtaining warrants for search from an international court or similar judicial body. But the fact remains that the scheme would legalize unhindered and uninterrupted strategic surveys, impinging directly upon national security.

Sovereignty is to be completely discarded with respect to atomic energy. National boards appointed by governments are to operate in accordance with the decisions of the international agency, in effect becoming branches of that body. And the surrender of national authority is to extend beyond the atomic industry proper, even beyond the supply branches and the broad field in which nuclear products may prove useful. Indirectly, the majority plan admits how broad are the powers of intervention in national affairs contemplated in the control scheme. It states that "the agency shall interfere as little as necessary with the operations of national agencies for atomic energy, or with the economic plans and the private, corporate and State relationships in the several countries."

The necessity for extensive interference is inherent in the plan itself, and also in the general policy of subordinating all possible peaceful applications of atomic energy to the professed paramount aim of assuring security, in the name of which it has not been uncommon to take over entire countries. Moreover, it is well to note the peculiar wording of the sentence quoted above, which appears in identical form in all official reports and summaries. Private and corporate relations are placed on the same plane as national economic plans and state relationships, obviously an attempt to equate the rights of monopolies with the rights of socialist governments. In one case the national rights of governments would be limited, in the other the rights of corporations. But if the operation of the "majority" mind is correctly understood against the entire background of the plan, broad interference was contemplated only with the state plans of a socialist nation, while the corporate hold on the industry in the United States and associated nations was to be safeguarded and extended.

No less restrictive are the proposed powers of control over the research and development upon which application of atomic energy for peaceful purposes depends. The major experimental work is to be centered in the scientific and engineering laboratories of the international agency, which is given the task of remaining in the forefront of nuclear research. Independent work involving quantities of nuclear fuel deemed "dangerous" by the agency would be prohibited. National and private laboratories would be permitted to carry on basic research, but as soon as the point of development is reached at which larger quantities of nuclear material are required, as in a power reactor, the agency would take over operation and management of the installation. In other words, if a country established a central or even a secondary nuclear power station, or used a nuclear pile to propel a ship, or developed reactors for purposes of therapy, or found a means of using atomic explosives for purposes of demolition in vast agricultural or industrial development projects, all installations involved would become the property of the international agency, subject to its management and restrictions.

In addition, the international agency would have the right to participate in national research efforts by loans and contracts and by offering the use of its own facilities, while individual nations would be obligated to keep the agency informed of all research and of the personnel in the field. National research would thus be entirely subordinated to the control authority, in basic as well as in applied branches.

Vested with these extraordinary powers over all aspects of atomics and over its multiple potential applications in many industrial and scientific activities, the control agency is authorized to make decisions by a simple majority, even when its rulings involve punishment and sanctions. Following Baruch, the majority scheme provides that the power of veto of the Security Council shall not pertain to the work of the control agency. By a show of hands, through which the United States has in fact obtained approval of its control plan at all stages of discussion, the agency would rule on the most vital questions affecting the development and security of nations. In this manner it would determine whether a violation of the control treaty has been committed and could automatically authorize sanctions. Under these circumstances the international control agency would become a super-authority, outside and above the Security Council, with war-making powers that the United Nations itself has never had.

Such is the control scheme that other nations were expected to welcome as a generous offer and to *put into effect* to the satisfaction of the United States before that government would agree to consider steps for the elimination of nuclear weapons from its national armory. The American plan, which became the majority plan, *never promised the complete elimination of the atom bomb.* According to the stated provisions of this plan, the international control agency was to have the right to experiment with nuclear weapons. If and when the United States agreed to discontinue the making of bombs and to dispose of its own stockpile, the weapons facilities were either to be converted to other uses or transferred to the international agency. The scheme, therefore, provides a means for the transfer of nuclear weapons production from national agencies of the United States to a super-authority, controlled by an American-dominated majority, and actively engaged in weapons research and development. The threat of atomic war, legalized by the U.N., would remain.

Nor does it follow from the majority plan that the United States will agree to dispose of its nuclear weapons within a definitely set period, even to an international agency which it controls. According to the scheme, the control system would go into effect gradually, stage by stage, under the supervision of the U.N. Atomic Energy Commission which would decide, by the same majority under which it has been operating, when one stage is finished and another has commenced. Only in the final stage, when all else has been brought under ownership and control, would the United States be required to dispose of its national stockpile. In three years of deliberation the majority of the U.N. Commission never reached the point of defining these stages, establishing their order of succession, or setting a time limit. The most important question—the total prohibition of nuclear weapons and the destruction of existing bomb mechanisms—remains vague, and is postponed to some indefinite future date.

The United States promises nothing of vital importance and surrenders nothing during the indeterminate period of transition to control. It retains all atomic facilities, stockpiles of nuclear explosives, and weapons, and continues blithely to expand nuclear production, as in fact it has done during the entire period of so-called negotiations. As the

Acheson-Lilienthal Report first expressed it, the plan guarantees that "should the worst happen and, during the transition period, the entire effort collapse, the United States will at all times be in a favorable position with regard to atomic weapons."[3]

Nor does the United States enter into a clear-cut commitment to dispose of its weapons stockpile in the end. In presenting the scheme to the United Nations, Baruch emphasized in typical jingo fashion that the manufacture of atom bombs would not stop before "an adequate system of control becomes fully effective," and even then such a system would have to be approved in line with "our constitutional practices." This left plenty of room for evasion, considering the well-known constitutional practices which enable a volatile Senate to reverse agreements reached by negotiations.

The norms by which a control system would be judged acceptable are also very elastic. A limitless vista of possible requirements was indicated by Baruch in his presentation of the scheme to the U.N. when he declared: "But before a country is ready to relinquish any winning weapon [Note the threat!—*J.S.A.*], it must have more than words to reassure it. It must have a guarantee of safety, not only against the offenders in the atomic area, but against the illegal users of other weapons—bacteriological, biological, gas—perhaps—why not? against war itself?" On this basis some new weapon could always be found, requiring even more complicated controls than atomic energy, to justify the perpetual postponement of the ban on nuclear weapons.

While there is no guarantee that nuclear weapons would in the end be prohibited and while the United States continues to expand its atomic industry, other nations are called upon, by stages still to be determined, to place their source materials, atomic development, and security in the hands of an agency controlled by the United States. Although the American representatives during the U.N. discussions remained noncommittal and vague on the problem of stages, it was indicated that control of raw materials, the main sources of which are situated outside the United States, should be the first stage. The Acheson-Lilienthal Report states flatly that "control of raw materials is an essential prerequisite for all further progress and it is the first job that the Authority must undertake."[4] This means that other nations would be required immediately to reveal all sources of atomic raw material, the location of their mines and dumps, and the rate of output, and submit to such aerial surveys and ground inspections as are set forth in the control scheme. They would also have to accept quotas and restrictions on output, affecting the entire development of the industry.

The only general advantage which the American plan seemed to offer was the release of information corresponding to the various stages. But this advantage was very dubious, to say the least, especially in view of what other nations had to surrender. In fact, during the earlier stages of transition, the United States would not be bound to turn over vital information, since it could always claim, as it did in justification of its control plan, that 80 percent of the industry was directly involved in the preparation of nuclear fuel, which could be used for weapons or for industrial purposes. Only after the final stage of control had been reached, and the United States was ready to eliminate the weapon from its national armaments, would all information become available. At no time during the discussions did the United States relax its extreme secrecy. Information transmitted to the U.N. in connection with the control plan did not go beyond published data, and was admittedly insufficient for independent judgment on the technical merits of the Baruch scheme.

In sum, the American plan carried forward the central features of the established nuclear weapons cartel. Just as government ownership and the corresponding control apparatus provided the framework for monopoly control of the atom bomb business in the United States, ownership by an international agency was to constitute the legal façade for the world cartel. The promise eventually to eliminate the bomb was merely a pretense, a hoax, and a deception to render the cartel scheme more palatable, a carrot dangled in one hand while the atomic bomb was held in the other.

The provisions for ownership, management, and operation of atomic facilities were similar to the pattern followed in the United States, where the A.E.C. used these powers to contract out the industry to the corporations. The corporate magnates and military scientists who drew up the original version of the majority plan, and represented the United States government in the U.N. Commission, were a preview of the personnel that would dominate such an international agency as the Baruch scheme proposed. The control agency was to fulfill the same cartel functions as the A.E.C. in the United States, but on a global scale allocation of materials, output, and uses; subordination of the physical sciences to the needs of nuclear weapons output; "classification" of data. It would be a repository of patents, a lobbying agent for the world monopoly groups before international organizations and governments, the co-ordinator of labor, and, far beyond this, a final arbiter of peace and war.

The restrictive and interventionist bias of the entire plan expressed the goal of the monopoly groups, interested in fortifying and extending their control of atomics for military purposes while severely limiting its industrial and developmental applications. Although phrased in terms of security and peaceful purposes, the scheme proposed intervention in national affairs on a scale that would place national sovereignty and security in serious jeopardy, while restricting in the name of security the use of atomic energy for economic and scientific development. The dismal failure of the United States, despite its great resources and head start, to develop atomic power and other constructive uses of atomic energy on a significant scale, renders entirely specious the argument that only the American plan would assure the beneficial use of atomics.

The atom bomb business as it now functions in the United States, is the model for world control set forth in the Baruch Plan.

The Soviet Position

The Soviet critique of the American or majority plan was sharp and to the point. The scheme was rejected on three main counts: (1) failure to meet the main issue, that is, total prohibition of atomic weapons; (2) unwarranted interference with economic development, national sovereignty, and security of states; and (3) overriding of the authority of the Security Council.

Throughout the debates, the Soviet spokesmen kept to the forefront the need to ban nuclear weapons, insisting that the control system must serve a twofold purpose: assure the prohibition of the bomb and at the same time encourage constructive application of atomic energy. The American scheme was criticized for failure either to ban the weapon or to promote peaceful atomic development, for it postponed the former indefinitely and would impede beneficial uses of atomic energy by a host of restrictions.

The elimination of nuclear weapons, as the cornerstone of the Soviet position, was proposed at the very start of the discussions. On June 19, 1946, one week after Baruch presented the cartel control program, Andrei A. Gromyko offered a draft treaty to prohibit the production and use of nuclear weapons "as a most serious international crime against humanity." The proposed convention was rejected by the majority, which insisted upon acceptance of the American control plan and its realization, with the vague promise that if other nations place their atomic industries at the disposal of the cartel-like agency they might receive some strictly rationed benefits from the new technology and, the United States willing, in due time the weapon might even be prohibited.

The prime Soviet proposal thus clarified the basic point at issue. At the time the draft convention for banning atom bombs was first presented, the cynical said the Soviet Union had everything to gain and nothing to lose since it did not have the weapon. But when the U.S.S.R. also had the bomb, prohibition still remained the pillar of the Soviet position. On November 10, 1949, A. Y. Vyshinsky, the Soviet Foreign Minister, told the General Assembly: "Prohibition of the atomic weapon is an inalienable part of the peace program which the Soviet Union advocated and continues to advocate, irrespective of where the superiority in the real alignment of forces may be, irrespective of whether the Soviet Union possesses the secret of the atomic weapon and the atomic weapon itself."[5]

On the other hand, the United States government consistently refused to pledge itself in an international pact, or even through a presidential statement or a resolution of Congress, to ban atomic weapons. It refused to agree in whatever form that the power first using the bomb should be branded a criminal against humanity. Moreover, President Truman stated more than once that he would not hesitate to order its use against "aggressors," as defined of course in terms of American policy. Not a critical situation has arisen in world affairs but that the threat to use the weapon has been implicit, or some jingoist has openly proposed its use. This has been the position at all times, when the United States was the sole possessor of the weapon and also when it could no longer claim an exclusive monopoly but counted instead upon superior weapons and stockpiles.

Soviet insistence upon total elimination of atomic armaments and American refusal to make this commitment are the essential content of the entire debate on control of atomic energy.

The Soviet representatives have also made clear beyond any possibility of misunderstanding why the American control proposals were unacceptable.

In the first place, they pointed out, other countries would become dependent for atomic energy upon the United States, which would dominate the industry on a global scale. They cited the dependent position of Britain in this respect as an example of what would happen if the majority scheme were put into effect. In control of the international agency with proprietary rights over source materials, production facilities, and nuclear products, the United States could impose policies in the interest of the very monopolies which command the atom bomb business today. On the other hand, barred from national ownership of atomic installations, independent research, and the right to use the new technology as an integral part of its economic planning, the Soviet Union would be impeded in developing atomic energy for power, transport, industry, irrigation, therapy, and scientific progress.

The American position, reflecting monopoly control of the economy and the surfeit of productive forces in relation to profitable markets, would severely restrict the peaceful use of atomic energy in the alleged interest of security. The Soviet Union held that the necessary controls could be established to assure the prohibition of atomic weapons, without sacrificing the limitless constructive possibilities of atomics, which are emphasized in the Soviet approach. Thus Vyshinsky told the General Assembly:

"We, in the Soviet Union, are using atomic energy not for the stockpiling of atomic bombs, although I am convinced that when—if this should unfortunately happen—they are needed, we shall have as many as will be required. We use atomic energy for our economic plans, in our economic interests. We have set atomic energy to perform great tasks of peaceful construction, we want to put atomic energy to use in leveling mountains, changing the course of rivers, watering deserts, and laying new life lines in places where the foot of man has rarely stepped. This is what we, the masters of our land, are doing, under our plan, and we shall not in this matter subordinate ourselves or render account to any international agencies."[6]

Secondly, the ownership principle, which is the pillar of the American control scheme, would legalize direct intrusion by a monopoly-controlled agency upon the socialized economy of the Soviet Union over a broad sector. The rights of ownership, licensing, and survey of the national territory are practically without limit in the American plan. They would affect not only the nuclear industry proper but all industries supplying atomic establishments and all branches of the economy in which nuclear products may be employed. Such interference in the socialist economy would never be countenanced by the Soviet Union, as the authors of the scheme must have known well. Gromyko stated clearly enough: "The Soviet Union does not intend to make the fate of its national economy dependent upon United States financiers, industrialists, and their underlings who seek to bind other countries and, in particular, the Soviet Union, hand and foot, and to justify their position through a subservient majority."[7]

Thirdly, the Soviet Union rejected the majority control proposals as interference with national sovereignty and security to an extent going far beyond the requirements of a bona fide enforcement system against atomic weapons, and as directed specifically against the Soviet Union. "One must be entirely bereft of one's reason to expect that such a plan can be acceptable to the Soviet Union," Vyshinsky declared, when the international agency, with its extensive interventionist powers, would be under control of "a majority, the overwhelming proportion of whom are members of the North Atlantic, West European and similar military and political blocs hostile to the Soviet Union."[8] For reasons of security alone, which the American plan professed as the aim of control, the Soviet Union could not accept a scheme which would provide a hostile bloc with a strategic bombing map of its territory, already invaded a number of times since the Russian Revolution.

Finally, as the initiators of the scheme knew in advance, the Soviet Union was opposed to any tampering with the veto power of the Security Council, the only legal protection of the U.S.S.R. against an unfriendly majority. The abolition of the veto became indispensable to the majority plan on two counts: It would perpetuate majority, that is American control over atomic energy; and by placing the control agency above the Security Council, it would undermine and destroy the authority of the latter body. As was to be expected, the Soviet Union rejected the proposal on both counts.

Accordingly, the Soviet rejection of the majority plan was based upon consideration of the scheme in its entirety as well as in its separate parts, contrary to the impression sometimes maliciously spread that the Soviet Union was merely playing for time and had no thoroughly considered position of its own. From the viewpoint of its own national development and security, not to speak of the concern for peace, the Soviet Union was fully justified in rejecting the scheme for reasons which its spokesmen stated clearly and unequivocally.

Attempts were made far and wide to distort the Soviet position, making it appear that the U.S.S.R. was interested only in abolishing the American bomb stockpile while resisting effective controls over its own atomic weapons. Actually, as the record demonstrates, the Soviet Union proposed from the beginning a comprehensive system of control to assure the fulfillment of the convention outlawing nuclear weapons.

When Gromyko first proposed the ban, he emphasized that measures of supervision and control, as well as provision for strict sanctions against violators, would be necessary, and suggested that work along these lines be undertaken immediately. He also proposed the free exchange of scientific information, without which it would be difficult to gauge the effectiveness of control measures and to explore satisfactorily the fields in which atomic energy could be used constructively, while barring weapon production.

Obviously, the Soviet Union was not yet ready to present a detailed plan of its own. Supporters of the Baruch scheme kept heckling the Soviet representatives for their failure to do so, in conjunction with the proposal to outlaw weapons. But this criticism was entirely specious, considering the fact that the Soviet Union, having been completely immersed in the war and confronted with vast tasks of reconstruction, had not yet had the opportunity to develop big atomic projects of its own and to acquire the first-hand information needed to formulate and verify a workable control plan. Nor is it surprising that the Soviet Union refused to accept, as sufficient for independent judgment, the quota of information released by the United States on its unilateral assurance that this was enough to justify the proprietary and interventionist provisions of the Baruch Plan. A workable and effective control plan could not be imposed; it would have to be negotiated on a plane of equality.

It was not the necessity of control but the method of control which was at issue. On October 28, 1946, Stalin declared in a press interview that "a strong international control of atomic energy" was necessary. At the end of that year, in discussion of the first report of the Commission, Gromyko stated that the Soviet Union favored an international control agency with powers to inspect national nuclear facilities to assure atomic disarmament. Opposing firmly any weakening of the authority of the Security Council on questions of punishment and sanctions, he proposed that the control agency carry on its normal functions of inspection and investigation by majority decisions, in accordance with principles set down in a treaty.

These initial control proposals were formalized on February 18, 1947, as amendments to the First Report of the Commission. Here we read that, to be effective, a convention to outlaw atomic weapons "must be complemented by the establishment of a comprehensive system of international control, including inspection." The Soviet amendments also insisted that the control system must function within the framework of the Security Council, while the agency and its organs "should carry out their control and inspection functions, acting on the basis of their own rules, which should provide for the adoption of decisions, in appropriate cases, by a majority vote."[9]

Early in the discussion, therefore, the Soviet Union recognized that certain areas of national sovereignty would necessarily be involved if effective safeguards against nuclear weapon production were to result. To keep such interference to a minimum, and yet satisfy the requirements of weapons control, the Soviet Union favored inspection rather than ownership, which is the pivot of the Baruch control plan. Furthermore, the Soviet Union agreed that the control agency would operate by majority decisions in carrying out its well-defined functions, as a body responsible to the Security Council which alone could decide upon sanctions. These first steps, representing serious efforts to find common ground, were rejected offhand by the majority.

Detailed Soviet proposals for an international control agreement were presented on June 11, 1947, as basic provisions of an international treaty to be elaborated further in the process of joint discussion. These draft proposals advanced the principle that "strict international control shall be established simultaneously over all facilities engaged in the mining of atomic raw materials and in the production of atomic materials and atomic energy . . . to ensure the use of atomic energy for peaceful purposes only." Thus, rather than the long drawn-out process of stages in the American plan, the Soviet plan calls for the imposition of control over all phases at once, to make effective the ban against atomic weapons and to safeguard nations against evasions and violations.

The control commission, operating within the framework of the Security Council, is to have extensive powers of inspection, checking and investigation. These powers are to apply to all mining, production, and stockpiling facilities, and also to installations engaged in the use of nuclear elements and atomic energy. The agency is to have access to these facilities in all countries for purposes of control.

The powers of inspection provided by the Soviet plan are twofold. Periodic inspections are to be made of all declared facilities. In a subsequent clarification of this point the Soviet spokesman said that this does not necessarily mean inspection at regular intervals, fixed beforehand, but may also be carried out as the agency sees fit. Nor does it mean constant inspection, which would be equivalent to management, or, as Vyshinsky put it, to some authority coming in and keeping his feet on the desk. The agency is also to have the power of special investigation where violations are suspected by the commission itself or by one or several governments. In this respect, it was pointed out, inspection would prove adequate as a safeguard against illegal activities because of the magnitude of operations needed to produce dangerous quantities of atomic material.

In addition, the control agency could check accounts and stocks, provide operating procedures and study production operations, require reports from governments and check on these.

The commission would have its own research facilities, but would be barred from research on nuclear weapons. Each nation could carry on independent scientific research in the constructive application of atomic energy and in developing the science, while the commission would assure a wide exchange of information and give advice to countries requesting such assistance.

According to the Soviet plan, the commission is to operate by majority decision in the performance of its control functions, which are to be defined in the international treaty. But it is not to have the power, as suggested in the American scheme, to impose its rulings upon governments. It can make recommendations to governments on matters relating to atomic energy, and in case of violations it would make recommendations to the Security Council, which alone has the power to impose sanctions. It would be the duty of the individual governments to make the necessary provisions within each country to fulfill the terms of the convention banning atomic weapons and of the treaty on control, opening their territories to inspection and investigation under procedures agreed upon in advance.[10]

Presentation of the Soviet position on atomic energy would be incomplete without calling attention to simultaneous proposals of the Soviet Union for the banning of all weapons of mass destruction and for general disarmament. That government was ready to apply the same principles of prohibition and control over disarmament in the field of conventional weapons. The Soviet plan for control of atomic energy must therefore be viewed as an approach toward general disarmament, a fitting answer to those who maintained that the banning of the atomic weapon alone would leave the U.S.S.R. with superiority in land forces and other weapons. By linking general reduction in arms with the ban on the nuclear weapons, the Soviet Union signified its readiness to negotiate disarmament in all branches, in a realistic appraisal of the role of all arms in modern warfare.

The Soviet control proposals met the same fate at the hands of the majority as all previous efforts to find common ground. They were rejected by the majority of the A.E.C. of the United Nations primarily because they did not satisfy requirements set forth by the United States as basic before it would consider the prohibition of atomic weapons. Specifically, the majority held that (*a*) periodic inspection and special investigations were insufficient as control measures; (*b*) the control commission would have no powers of enforcement; and (*c*) the control agreement would be concluded only after the convention to prohibit the bomb had been put into effect. They insisted that only the proprietary and broadly interventionist majority plan, with overriding powers of enforcement, offered the necessary technical and political guarantees. Here the matter stood. Since 1948, the majority nations have attempted to discontinue discussions, on the ground that the Commission could not overcome the impasse, but each time the General Assembly, reflecting the fear of atomic war and world-wide pressures for peace, sent the Commission back to work, and each time the Soviet Union insisted upon the continuation of discussion in an effort to bridge the gap.

When the General Assembly first rejected the proposal to discontinue the Commission, the Soviet Union made an important concession to the majority position in an effort to resume discussion on a new basis. It proposed in 1948 that the two conventions for prohibition and control be concluded and come into force simultaneously, thus meeting one of the prime stated objections of the majority to the Soviet proposals. This new Soviet proposal presented the opportunity to resume discussions on a new basis, to seek a new start. But the offer was rejected, the American-controlled majority insisting that the Soviet Union first agree to the American control plan, with its basic

provisions for ownership, intervention, and abolition of the veto.

Again, in 1949, Vyshinsky proposed simultaneous treaties on prohibition and control, but to no avail. The same proposition was made to the General Assembly in December 1950, where the Soviet foreign minister rebuked the United States sharply for deliberate sabotage of all efforts to resume negotiations, in order to give itself a free hand to stockpile atomic weapons. A significant passage in this speech was generally ignored in the American press. Vyshinsky challenged the United States to enter into peaceful competition on the constructive use of atomic energy, especially in the development of nuclear power. In a previous speech he had called attention to the great potentials of atomic energy in the vast construction and irrigation projects of the Soviet Union.

Now, referring directly to the power potential, he said: "The work now being done in this field in the Soviet Union convinces us that the production of thermal and electric power from atomic fuel is undoubtedly expedient and promising of full possibility for a further and vigorous advance of very many countries of the world along the road of progress."[11]

In this respect, the United States might well enjoy a head start even greater than the initial advantage it had in weapons production. It has a substantial stockpile of nuclear fuel prepared for weapons, which can be turned to other purposes, as well as a vast technology and access to plentiful raw material. Here is an opportunity to demonstrate to developed and under-developed countries alike the wonders that can be performed with this new and limitless source of energy, by a country that prides itself on "know-how" and never tires of extolling its system of society. But not even a ripple appeared on the cold and forbidding surface of American atomic diplomacy.

From the entire record of five years of fruitless negotiations the impression is inescapable that the United States from the beginning did not intend to ban atomic weapons, nor did it wish a system of control directed against their production and use. The Baruch plan and the subsequent U.N. majority scheme were attuned to the supposition that the United States would be able to maintain its monopoly of the atomic bomb for a long time. When it became obvious that an exclusive monopoly of the bomb could no longer be counted upon, the American control scheme was still considered useful in holding off the possibility of agreement to permit the United States in the meantime to build up a vast superiority of nuclear weapons. The entire course of postwar rearmament in this country was in fact premised on the employment of the bomb, as the supreme strategic weapon. The air force was expanded, the guided missiles program was organized, and bases were established throughout the world with a view to the delivery of atom bombs over Soviet cities.

While the American government assiduously turned aside every effort to ban atomic warfare, it started still another great expansion of the weapons industry, including work on the hydrogen bomb. It also hurried experiments and tests with smaller caliber atomic weapons, which led to a new wave of war incitement, this time the threat to employ such weapons in the field, and specifically against Korea.

The atomocracy now tried to create the impression that the use of these new weapons would not be greeted with the same universal horror and moral condemnation as the employment of atom bombs. In the arguments that were heard on this side of the Atlantic, a distinction was made between two kinds of atomic annihilation, one less reprehensible than the other. The use of bombs in Korea and China, more powerful than those visited upon Hiroshima and Nagasaki, had been urged. But it was generally argued that these bombs were so rare and expensive that they should be saved for only the most important strategic missions, for knock-out blows by transcontinental bombers against the great cities and industrial centers of a really great power. To use them otherwise would be a waste, so the argument ran, and besides would arouse world-wide resentment against the United States.

Smaller-calibered weapons, on the other hand, seemed to the atomocracy to meet these objections. The new twist in atomic military thinking was expressed by Gordon Dean, chairman of the AEC, in a speech at the University of California on October 5, 1951.

Referring to knock-out blows against heavily populated cities he said: "This concept of atomic warfare, while still true, is now no longer the whole truth. It is but one kind of atomic warfare, and there is now a new, quite different kind, much less fearsome as far as non-combatants are concerned, and much more promising as a means of halting aggressors without the risk of destroying large parts of the world in the process. Because of our great technological strides we are now entering an era when the quantities of atomic weapons available to us will be so great, and the types so varied, that we may utilize them in many different ways heretofore not possible. . . .

"In other words, I think that when a situation arises where in our carefully considered judgment the use of any kind of weapon is justified, *we are now at the place where we should give serious consideration to the use of an atomic weapon.*"[12] (Emphasis mine—*J.S.A.*)

This tortured reasoning reflects, however dimly, the impact of the world-wide movement among the people to force the banning of the atomic bomb. But above all it was a threat to build up what Senator McMahon called the "paramount instrument of victory" in all calibers, and to use them. With respect to the danger of a full-scale atomic war it matters little whether the weapon initially employed is of a smaller or bigger caliber, for once it was used, the fatal step would be taken leading to the employment of the entire range of nuclear explosives.

If it was thought that the United States could now gain an overwhelming superiority in all types of atomic weapons, this hope was soon dashed to the ground. Following another bomb test in the Soviet Union, an interview with Stalin appeared in *Pravda* of October 6, 1951. Stalin confirmed the fact that the Soviet Union had just carried out a test of "one type" of atomic bomb. He also announced that further tests would be made of "atomic bombs of different calibers." Stalin then stated that the first condition for preserving peace is the elimination of a monopoly of atomic weapons, to be followed by their unconditional prohibition. He then stressed the Soviet position in favor of prohibition and international control.[13]

This interview again brought to the fore as a cardinal question the resumption of negotiations on atomic and general disarmament, and in a setting which gave better promise of positive results. For it was now clear that the Soviet Union had progressed far enough to deprive the United States of an exclusive monopoly in any type of atomic weapon, and had thereby also destroyed the main appeal of the Baruch plan to the western European allies of the United States.

These were the first to grasp the significance of the Stalin interview. Even among the most conservative circles the necessity was urged of resuming negotiations. Thus, the *Times* of London favored entering into "any renewed negotiations that may be proposed," emphasizing that "to none is the prospect (of atomic war) more forbidding than to the inhabitants of this island." It even went so far as to acknowledge that the Soviet plan of control might be more easily achieved than the American "in a more trustful world."[14]

The People and the Bomb

While mastery of atomic energy in the Soviet Union was creating conditions for negotiations on a plane of equality, the growth of the world peace movement was significantly influencing the general political climate in favor of a settlement. During the years of stalemated negotiations, the people's pressure for peace mounted on a global scale.

This widespread sentiment achieved organized expression in April 1949, when the first World Peace Congress met in Paris, with participation from most countries of the world. This gathering, the product of the people's determination to halt the mad rush toward atomic annihilation, elected Frédéric Joliot-Curie, world-reknowned nuclear physicist and anti-fascist, as its chairman. He expressed the spirit of the world-wide movement when he told the Congress: "We are not assembled here to ask for peace but to impose it upon those who favor war."

The uncompromising position of the American atomocracy symbolized more than anything else the danger of global war. This therefore became the central concern of the World Peace Congress. The continuations committee, representative of many peoples and of diverse political ideologies, meeting at Stockholm in June 1950, launched the World Peace Petition, which came to be known as the Stockholm Pledge. Addressed to the parliaments of the world, the petition contained two simple propositions. It urged prohibition of all atomic weapons, with strict international control and inspection, and demanded that the first government to use atomic weapons should be branded as a war criminal.

In the consequent actions for peace more than a half billion people signed the petition, almost one-third the population of the world. Many more, certainly the vast majority, joined them in moral condemnation of any nation that would use atomic weapons. Rarely has the popular will for peace been so unmistakably expressed.

In the United States, as in other Atlantic bloc countries, the Stockholm Pledge was denounced by the government as a Soviet maneuver to disarm this country, and many courageous men and women who circulated the petition were hounded and persecuted. An effort was made to imprison Dr. W. E. B. Du Bois and other leaders of the World Peace Center in New York, but so great was the indignation here and abroad that the case had to be dismissed.

The Supreme Soviet parliament and the Peoples Democracies were

the only ones to adopt the Stockholm Pledge. In sharp contrast to the general atmosphere prevailing in the United States, they also passed laws providing severe penalties for anyone inciting war.

The movement which arose around the Stockholm Pledge became a force that could not be ignored even by the leaders of atomic imperialism. The sentiment against the atom bomb as the symbol of the war danger was much broader than registered in the petition. People without the faintest knowledge of atomic techniques, but well aware of the horrors of atomic war, view the outlawing of the weapon as a sensitive indicator of peace. These are simple but powerful facts, towering far above the technicalities of control. Perhaps the common desire for peace, the real fundamental of world policy, is too humane for the atomocracy to understand. The mass of humanity is not going to inquire into the allegedly complicated technical barriers to effective control when they know that hundreds of thousands of people may perish from a single bomb, which can be dropped anywhere in the world.

The movement set on foot by the World Peace Congress not only helped crystallize peace sentiment but also encouraged a marked trend within leading national circles of western Europe toward neutrality. All sectors of the population were affected by a growing hatred of the United States because of its belligerent and overbearing policies. The burden of armament they were asked to support as a result of the American military crusade was becoming too great. Above all, people were alarmed at the danger to their own country in an atomic war. Besides, the military stalemate that developed in Korea, as a result of the people's defense of their land, contributed in no small way to a realistic appraisal of the grandiose military pretensions of the United States.

In face of these developments, American official spokesmen were obliged more and more to pay lip service to peace, although no basic change in policy was noticeable. Nevertheless a certain restraint had been imposed. When Truman indicated in December 1950 that he was considering the use of the weapon in Korea, the outcry of horror was so great that Prime Minister Attlee had to come to Washington to argue that its use would be inadvisable.

In response to the growing anti-war and neutrality trends among the Atlantic bloc nations, the peace movement continued to grow and to broaden. The Second World Peace Congress met in Warsaw in

November 1950, after it had been shamelessly excluded from England by the Labor Government. The Congress centered attention on the growing demand that the five great powers return the United Nations to its originally intended course, and arrive at a settlement of the most important outstanding issues. Meeting in Berlin the following February, the World Peace Council (elected by the Warsaw Congress) launched the second great petition, an appeal for the conclusion of a pact of peace among the five world powers. By the end of the year almost 600 million signatures had been collected.

The days are long since past when a diplomacy of war can be operated behind the backs of the people of the world. That is the basic difficulty facing the leaders of imperialist aggression. Wherever they turn, whatever maneuver is attempted, whatever deception they may practice, the real intent and aim of their policy is immediately exposed.

The United States has reached the very zenith of imperialism, assuming a role as a world power unprecedented even during the heyday of British might. Atomic imperialism presents a more forbidding front and possesses greater military power than Nazi imperialism or the dollar imperialism of earlier days. But the United States has reached this position only to find that the scope of world imperialism in the atomic era has been severely delimited by the socialist transformation and colonial revolutions of our age, not only geographically but also in the realm of ideas that move people everywhere.

This is the unique condition under which atomic imperialism operates, the source of its fatal weaknesses and insurmountable difficulties. These circumstances cannot be shut out by turning the country into an isolated fortress, bristling with atomic weapons, nor can the basic social change through which the world is passing be stopped by another global war. Either variation of atomic diplomacy would prove disastrous to the American people.

Another course is possible. Within the present framework of world relations, when imperialist aggression meets determined resistance on all sides, the American people have the opportunity to fight successfully for peace. It is necessary to break through the wall of deception which hides from the people the basic policy of the Soviet Union for a peaceful settlement of differences. Throughout the years the Soviet Union has attempted to regulate relations with other countries on the premise that the capitalist and socialist systems can coexist in peace. This remains the fundamental approach of Soviet policy. Among numerous recent declarations to that effect, Stalin's reply to a letter from former Vice-President Henry Wallace in 1948 is especially precise:

"The government of the U.S.S.R. believes that in spite of differences in economic systems and ideologies, the coexistence of these systems and the peaceful settlement of differences between the U.S.S.R. and the U.S.A. are not only possible, but absolutely necessary in the interest of universal peace."[15]

That is the premise upon which differences can be negotiated without sacrificing an iota of national security or losing a single advantage from the viewpoint of peaceful development. In fact, such an approach would give us real security in a world at peace in place of the fear and insecurity which are the products of present national policy. Once we strike at the doctrine of war's inevitability we also strike hard at the gathering storm of reaction within the country, and the increasingly unbearable economic burdens which war preparations place upon the people.

The monopoly forces in control are afraid of peace. They will not swerve from their present course unless the people make the cause of peace their own. In the struggle for peace the people must assure their own future.

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